Lake Huron Fisheries Assessment Unit
Report 1-90

Status and Outlook for the Major Commercial Fish Species of Lake Huron, 1990

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Ontario Ministry of Natural Resources
Lake Huron Fisheries Assessment Unit

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INTRODUCTION

Allocations of fish to the commercial fishing industry are reviewed and where necessary revised annually. Offered here in support of the review is available stock status information from commercial fishing reports and various assessment activities. Graphs, tables, and text in point form are used extensively to facilitate assimilation and further dissemination of the material by district staff.

Harvests and quotas are tabulated by management area and species to facilitate the reconciliation process. Values of fish landed and sold are offered on a similar basis to give an economic dimension to the fishery.

The stock status information is dealt with in two sections, one concerned with variability in recruitment and recruitment prospects for the upcoming fishing year, and the other concerned with stock characteristics and stock performance under past fishing. Recruitment (the entry by individual year classes into the fishable stock) has been assessed through independent index fishing and from analysis of age composition data obtained through onboard sampling of commercial catches. Predictive capability depends on a high degree of correlation between these two sets of results. Commentary on past stock performance is largely dependent on fishing effort and harvest statistics provided by commercial fishermen and from catch sampling data. The importance of the monthly fishing reports as the cornerstone of all analyses can not be overemphasized. Under-reporting can undermine the entire assessment effort.

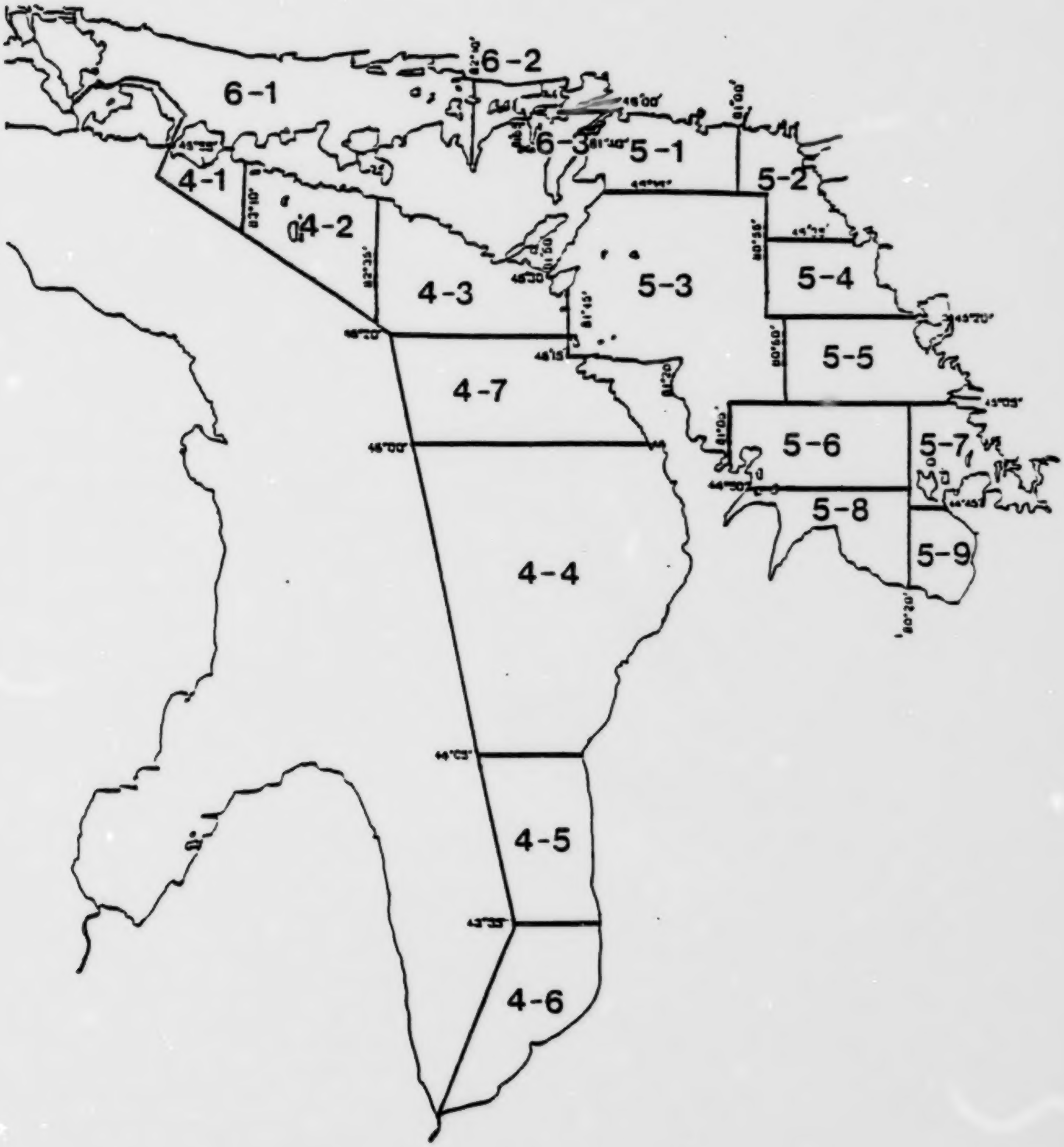
Results are presented on a management area basis (Figure 1) and also by assessment area (Figure 2) where more than one assessment area falls within a management area. The assessment areas continue to be the better representation of separate fish stocks, provided separate and adequate data can be obtained.

For any management/assessment area, the level of current assessment is dependent on three factors: the type of programs in place, the length and completeness of the data series, and the time available for analysis. For both financial and logistical reasons, index fishing is possible at a limited number of locations around the lake. And by agreement with the industry, in some lightly fished, "low risk" areas, liberal allocation practices for strictly commercial species replace the close monitoring that would otherwise be necessary for annual manipulations in response to stock changes. Not all data series are of a length to permit time-series analysis, North Channel index fishing being a good example. And missing data, as may arise when access to commercial catches is denied or funding constraints limit the duration of sampling, may interfere with certain analyses. Assumptions may be made to permit an analysis to proceed under such circumstances. Time for analysis remains a major limiter.

It will be evident from the foregoing that stock assessment depends on data from a number of sources. Figure 3 shows schematically why each data source offers but one piece of the picture and how the data are integrated at different stages of analysis. The analysis described is not carried to the same level in all assessment areas.

All data presented graphically in the Stock Performance and Outlook section are also presented in tabular form in a separate volume titled "The Status and Outlook for the Major Commercial Fish Species of Lake Huron 1990 - Appendix 1".

Figure 1. Lake Huron management areas.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6-2
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5-4
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5-6
5-7
5-8
5-9
4-4
4-5
4-6
46°00'
83°10'
82°35'
45°20'
45°15'
81°45'
81°20'
81°00'
80°35'
80°50'
45°05'
46°00'
44°45'
80°20'
44°05'
43°35'

Figure 2. Lake Huron assessment areas.

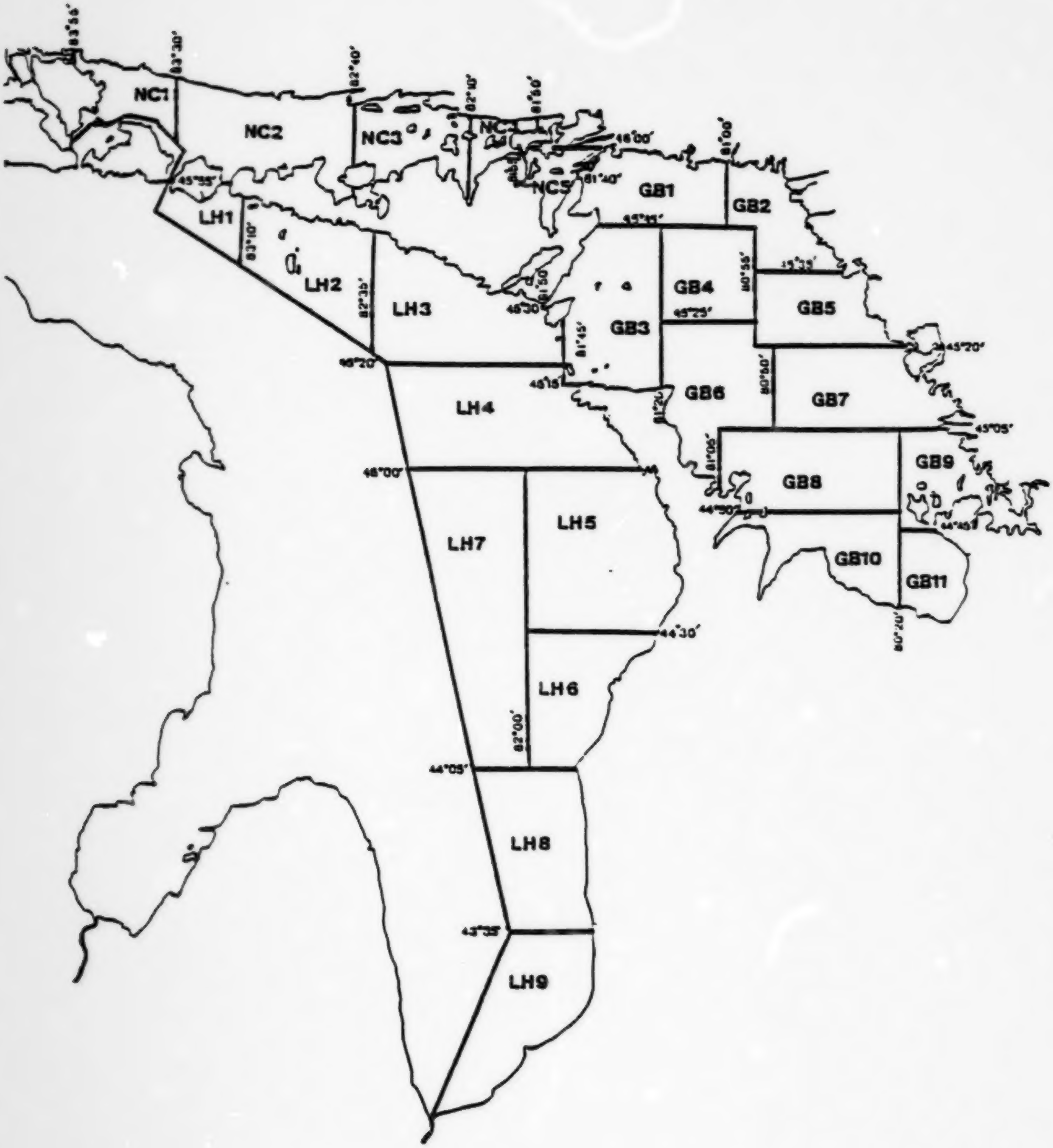
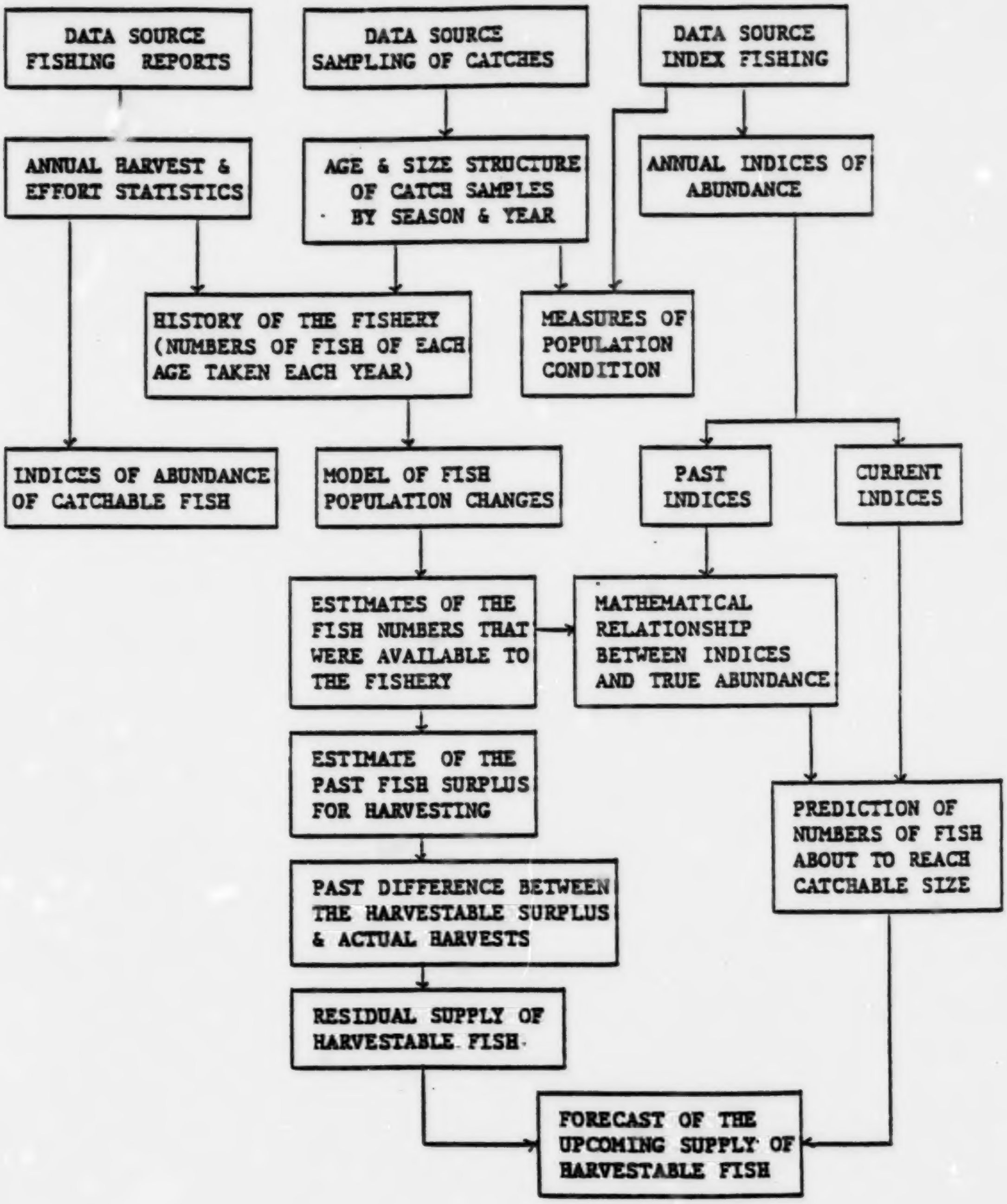

83°55'
83°30'
82°40'
82°10'
81°50'
NC1
NC2
NC3
NC
46°00'
81°00'
45°55'
NC5
81°40'
GB1
GB2
LH1
83°10'
LH2
82°35'
LH3
45°35'
45°35'
80°55'
GB4
GB5
46°30'
81°50'
81°45'
GB3
45°25'
46°20'
45°20'
46°15'
GB6
80°50'
GB7
81°20'
LH4
45°05'
81°05'
GB8
GB9
46°00'
44°50'
44°40'
LH5
LH7
GB10
GB11
80°20'
44°30'
LH6
82°00'
44°05'
LH8
43°35'
LH9

Figure 3. Methods of data integration and analysis used in fish stock assessment on Lake Huron.


DATA SOURCE
FISHING REPORTS
DATA SOURCE
SAMPLING OF CATCHES
DATA SOURCE
INDEX FISHING
ANNUAL HARVEST & EFFORT STATISTICS
AGE & SIZE STRUCTURE OF CATCH SAMPLES BY SEASON & YEAR
ANNUAL INDICES OF ABUNDANCE
HISTORY OF THE FISHERY (NUMBERS OF FISH OF EACH AGE TAKEN EACH YEAR)
MEASURES OF POPULATION CONDITION
INDICES OF ABUNDANCE OF CATCHABLE FISH
MODEL OF FISH POPULATION CHANGES
PAST INDICES
CURRENT INDICES
ESTIMATES OF THE FISH NUMBERS THAT WERE AVAILABLE TO THE FISHERY
MATHEMATICAL RELATIONSHIP BETWEEN INDICES AND TRUE ABUNDANCE
ESTIMATE OF THE PAST FISH SURPLUS FOR HARVESTING
PREDICTION OF NUMBERS OF FISH ABOUT TO REACH CATCHABLE SIZE
PAST DIFFERENCE BETWEEN THE HARVESTABLE SURPLUS & ACTUAL HARVESTS
RESIDUAL SUPPLY OF HARVESTABLE FISH
FORECAST OF THE UPCOMING SUPPLY OF HARVESTABLE FISH

RECRUITMENT

"Recruitment" refers to the entry into the fishery of new year-classes. Because of differences in growth rate of individuals in the same year-class, not all members of a year-class will recruit at the same time, and often not in the same year. For example, recruitment of a chub year-class presently occurs over three or more years.

Forecasts of recruitment are not equivalent to forecasts of overall abundance of exploitable fish. Abundance is determined not only by the addition of new fish into the fishery, but also by carry-over of year-classes previously recruited. Final evaluations of stock status must take both into account.

Index fishing produces estimates of year-class strength that are in relative, not absolute terms. The indices given are composite indices, derived by relating the catch of a year-class at given ages with the catches of previous year-classes at the same ages. On the scale of indices, an index of 10 represents the average strength of year-classes in the time series. With each new set of observations, the reliability of the index for a year-class should improve.

The indices are considered to be reasonable predictors of trends in recruitment on the basis of: (i) correlations obtained from previous linear regressions of commercial fish recruit estimates on the indices; and (ii) visual comparisons of year-class indices with subsequent contributions to the fishery.

Quantitative prediction of changes in recruitment requires calibration of the indices against year-class performance in the commercial fishery. This is because the year-class indices generally exhibit greater variability than the actual year-class contributions to the fishery, resulting in an exaggeration of differences between strong and weak cohorts. In the past, abundance estimates for already recruited year-classes were obtained from catch-at-age analysis (CAGEAN) of some fisheries, and then regressed on the corresponding year-class indices to determine the parameters of a linear relationship between the two data sets. No CAGEAN analyses were performed this year, so no quantitative forecasts of recruit abundance could be made. However, for the LH09 walleye fishery, commercial trapnet CUEs for age 3 walleye were estimated from the fishery statistics, and regressed on the year-class indices to predict the age 3 CUE for 1990 and 1991. For all other stocks where pre-recruit information is available, forecasts are made in terms of increasing, decreasing or stable recruitment to the fishery.

The following text is organized by basin, then species. Discussion does not focus on individual management areas because index fishing projects occur in only one or two locations per basin, and the results are (tentatively) extrapolated to other areas.

LAKE HURON

Index gillnetting takes place in central Lake Huron at Oliphant (LH05), and in southern Lake Huron at Grand Bend (LH09) and Bayfield (LH08). Abundance of pre-recruit lake whitefish, chub, and yellow perch is monitored through these projects. Fishing is carried out in both areas in both June and September, but the September fishing in southern Huron occurs only at Grand Bend. Because of proximity, catches from Grand Bend and Bayfield are lumped together for analysis.

Additional data for chub are obtained by sampling trawl catches by the U.S. Fish and Wildlife Service at Goderich (LH08). An index of abundance of yearling walleye is obtained from the Lake St. Clair Fisheries Assessment Unit for application to the LH09 walleye fishery.

Lake Whitefish

Figures 4 and 5 illustrate the abundance indices for whitefish year-classes in LH05 and LH08-9, respectively. The latter graph covers fewer year-classes because the south Huron project has been in place for a shorter duration.

There are similarities between both sets of indices. The 1983 and 1984 year-classes were weaker than those of other recent years, and improving strength has been noted for 1985 and especially 1986. The lakewide supply of age 4 and 5 whitefish is therefore expected to be strong in 1990.

In central Lake Huron (Figure 4), this improvement should be bolstered in fall 1990 as age 3 fish of the strong 1987 year-class begin to recruit. The 1991 picture should be even better with an increased supply of age 4, 5 and 6 whitefish. Based on its first showing in fall 1989, the 1988 year-class is rated as good.

Besides the strong contribution of age 4 fish mentioned above, the southern Lake Huron fishery in 1990 is expected to have good representation from the 1987 year-class (age 3), and in the fall should start seeing large numbers of two-year-olds from the strong 1988 year-class (Figure 5). The 1988 cohort will contribute even more in 1991 at age 3.

Fisheries in northern Lake Huron are expected to benefit from increased abundance of age 4 and 5 fish in 1990, and ages 4 to 6 in 1991, assuming year-class trends similar to those in LH05.

Chub

Indices of chub year-class strength are shown in Figures 6 and 7 for central and southern Lake Huron, respectively. The LH08 trawl indices are used for the southern stock because of the longer time series for those data compared with the LH08-9 gillnet indices (12 vs 7 year-classes), and because the trawl data include more recent cohorts due to the greater vulnerability of younger chub to trawls than to gillnets. Linear regression of LH08-9 gillnet indices on LH08 trawl indices shows very strong agreement between the two data series ($r^2=0.96$, $p=0.001$, $n=7$). There is also good correlation between the central and southern indices ($r^2=0.82$, $p=0.001$, $n=11$).

A prominent feature of recent year-class production in both areas of the lake is three strong year-classes produced in 1982, 1983 and 1984, with considerably weaker ones following. The supply of chub entering the fishery should currently be high, and is likely to continue high during 1990 with large numbers of age 6, 7 and 8 fish. Subsequently, recruitment will begin to decline as the weaker year-classes move into the picture. Preliminary indications from the LH08 data are that the period of reduced recruitment may last some three years. Trawling in October 1989 produced evidence of a strong 1988 year-class, which could begin to figure in the 1992 or 1993 fishery.

The timing of the anticipated decline in recruitment (and hence, abundance) is difficult to predict because of decreasing growth rate and extended duration of recruitment of individual year-classes. Size-at-age declined during the 1980's (Figure 8), delaying the age of first recruitment from age 3 in 1980 (when the strong 1977 year-class entered the fishery) to age 4 by the end of the decade. More significant is the period over which a cohort recruits to the fishery. The 1982, 1983 and 1984 year-classes of chub in 1989 still included many fish below the size of peak vulnerability (23-25 cm FL) to chub gillnets. Figure 9 illustrates the length distributions of age 5, 6 and 7 chub from index gillnets in LH05 in September 1989, showing that a large proportion of five- and six-year old chub, and some seven-year-olds, had yet to recruit to the commercial gear. Commercial catch sampling data confirmed this situation, indicating that discarded (undersize) chub in 1989 were mainly composed of ages 5 and 6, with substantial numbers of age 7 fish as well.

Yellow Perch

Year-class indices from LH05 (Figure 10) show that the very strong 1983 cohort has been followed by a moderate 1984 and weak 1985 year-class, with improving strength for the 1986 and 1987 year-classes. Preliminary indications are that the 1988 year-class is of average strength. Recruitment in 1989 probably increased, as the 1986 year-class became vulnerable to the gear. Continuing improvement is forecast for 1990 and 1991 when the 1986 and 1987 cohorts will be fully recruited. Although the strong 1983 year-class was still present in large numbers during 1989, fish of that cohort were mostly beyond the size of vulnerability to 2.5 inch gillnets; those fish were taken in 3.0 and 3.5 inch index gillnets.

Indices for southern Lake Huron (Figure 11) similarly indicate that increased recruitment would have occurred in 1989, and should continue in 1990 and 1991, due to strong 1986 and 1987 year-classes. The 1988 cohort did not show well as yearlings in index catches, but that year-class will be evaluated again in 1990 at age 2.

Walleye

Indices of yearling walleye abundance from Lake St. Clair (Figure 12) show three consecutive strong year-classes produced in 1984, 1985 and 1986. Recruitment to the trapnet fishery begins at age 2 (mainly in fall) and peaks at age 3, so all three cohorts would have been in the fishery in 1989. With weaker 1987 and 1988 year-classes, recruitment of age 2 fish in fall 1989 would have been lower, and a further drop in recruitment will continue through 1990. This decline should not be severe, however, because the preceding strong cohorts will remain in the fishery for some years. The low values for the 1987 and 1988 year-classes shown in Figure 12 are believed to be underestimates because of catchability conditions in Lake St. Clair during the index fishing there. Using an adjustment factor based on average CUEs for walleye and for all species, those index values were estimated upwards by 1.4X and 3.0X, respectively, as shown on the bargraph.

The walleye indices were calibrated with observed age 3 trapnet CUEs from LH09. Strong correlation was obtained between the two data series (r^2=0.92, p=0.001, n=10), indicating high predictive capability for the indices. Figure 13 shows that the predicted CUE for age 3 walleye in 1990 will be less than half the observed 1989 value.

GEORGIAN BAY

Index fishing in Georgian Bay has been carried out annually at Cape Rich (near Meaford) since 1973 and in Owen Sound bay since 1984. Both of these are in management area 5-8 (GB10). Because of the longer time series and greater fishing effort, only the Cape Rich data have been used to develop year-class indices. Although indices for lake whitefish, chub and yellow perch are presented, the fishing effort, targeted at lake trout backcross, is primarily suited only for whitefish monitoring. Therefore, the chub and perch indices are subject to greater variability, and are mainly useful for detecting strong year-classes only, rather than rating all year-classes. Index fishing targeted at chub was begun in July 1989 in the two major chub fishing areas GB03 and GB06 (management area 5-3), and was also done in the refuge area of GB09 (management area 5-7).

Lake Whitefish

Whitefish year-class indices from GB10 are plotted in Figure 14. Cohorts produced immediately after the very strong 1982 year-class have not been large, but increasing strength has been observed for the most recent year-classes. Recruitment in southern Georgian Bay should increase during 1990 with good abundance of age 4 fish (1986 year-class) and of age 3 fish (1987 year-class) in the fall. The strong 1987 year-class will have greater effect in 1991 at age 4, and preliminary indications are that it will be followed by a strong 1988 cohort.

The five-year periodicity of strong year-class production in southern Georgian Bay (1977, 1982, 1987) invites speculation of a stock-recruitment effect, whereby production is limited by spawner biomass. With whitefish abundance in this basin low relative to historical levels, conditions are suitable for a stock-recruitment relationship to be apparent. However, those years have also produced good cohorts in parts of the Lake Huron basin, suggesting an effect of environmental factors on year-class production.

Chub

The strong 1983 year-class and moderate 1984 year-class of chub in GB10 (Figure 15) have been followed by relatively weak cohorts. Age distributions from the July fishing in GB03, GB06 and GB09 support the indication of poor year-class production since 1984 (Figure 16). A decline in recruitment is therefore considered inevitable once the 1983 year-class has completed its major contribution to the fishery. Entry of fish from the 1983 and 1984 year-classes will likely remain good in 1990, but recruitment is now expected to drop in 1991.

As with the main basin chub population, predicting the timing of the recruitment decline is difficult because of the extended period over which a strong cohort recruits. Last year, the assumption was made that entry of the 1983 year-class into the fishery was by and large complete, but evidence now suggests that more contributions are yet to come from that cohort. Figure 17 shows the size distribution of age 6 chub (1983 year-class) in the index catches in GB03, GB06 and the GB09 refuge. In the former two areas, many six-year-old chub were still below the peak of vulnerability to chub gillnets (23-25 cm FL). Thus, the supply of age 7 fish in 1991 is expected to be strong. The contrasting size distribution from the GB09 refuge reflects the lack of fishing-induced size selectivity, and possibly growth conditions.

Yellow Perch

The strong 1983 year-class of perch in GB10 (Figure 18) is assumed to be past full recruitment. (There is no catch sampling data available to verify this assumption.) Relatively poor year-classes were produced in 1984 and 1985, but a moderate 1986 cohort and strong 1987 year-class should produce improving recruitment to the sport and commercial fisheries of southern Georgian Bay in 1990 and 1991.

NORTH CHANNEL

Lake whitefish

Although several attempts have been made to establish an index program in this basin for lake whitefish, pre-recruit catches in the Blind River area at times available for netting operations have been inadequate. New approaches are planned to try to overcome the logistic difficulties of assessing juvenile whitefish in the North Channel. Meanwhile, assessment netting for lake trout backcross in the Gore Bay/Darch Island area (NC02) has yielded modest catches of whitefish in 1988 and 1989. The limited age distribution data suggest good strength for the 1987 year-class. If true, recruitment would increase in 1991.

Yellow Perch

Index netting aimed at perch has been performed annually at Clapperton Island (NC03) since 1986, producing large catches of pre-recruits. Year-class indices are plotted in Figure 19, showing a strong 1983 year-class followed by two lesser ones produced in 1984 and 1985, then increasing year-class strength in 1986 and 1987. Initial evaluation of the 1988 cohort rates it as poor. Recruitment to the sport and commercial fisheries in 1990 should improve over 1989 as age 4 fish (1986 year-class) supplement continuing entry by the mediocre 1984 and 1985 cohorts. In 1991 and 1992, recruitment should increase further as the strong 1987 year-class becomes vulnerable to the fishery.

SUMMARY

The outlook for most stocks is favourable. In the main basin of Lake Huron, increasing recruitment is forecast for lake whitefish and yellow perch. Although chub stocks are presently at a fairly high abundance, a drop in chub recruitment is anticipated, probably beginning in 1991.

Southern Georgian Bay whitefish and perch are also expected to see improving recruitment over the next two years. A decline in chub recruitment will begin by 1991.

North Channel perch recruitment should increase in 1990 and 1991. Data for whitefish are inadequate for predictions.

Figure 4. Indices of year-class strength for lake whitefish from index gillnetting in management area 4-4 (LH05), 1981-1989.

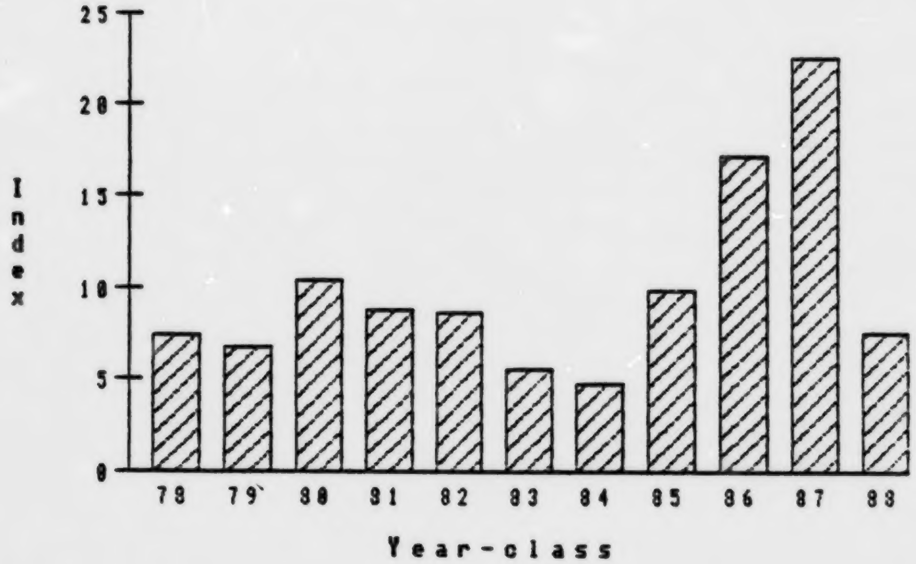


Figure 5. Indices of year-class strength for lake whitefish from index gillnetting in management areas 4-5 and 4-6 (LH08-9), 1984-1989.

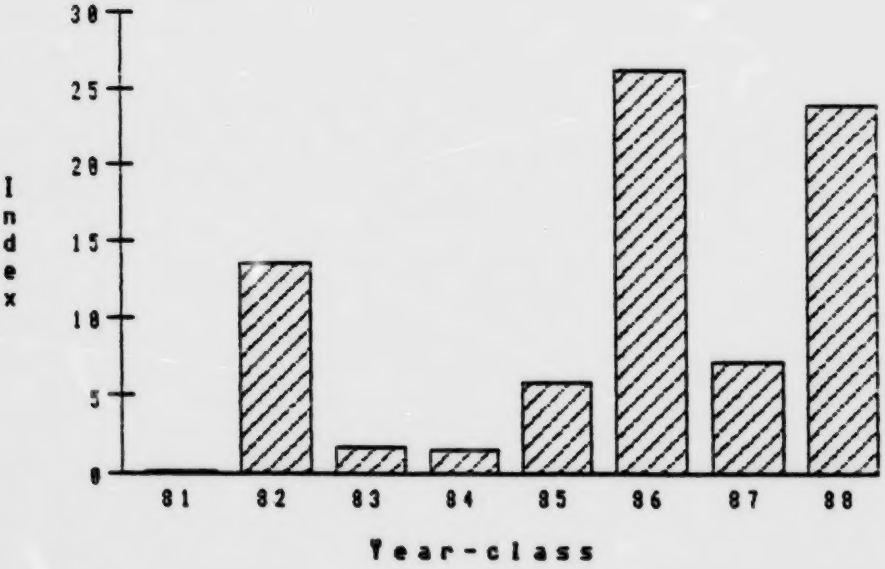


Figure 6. Indices of year-class strength for chub from index gillnetting in management area 4-4 (LH05), 1981-1989.

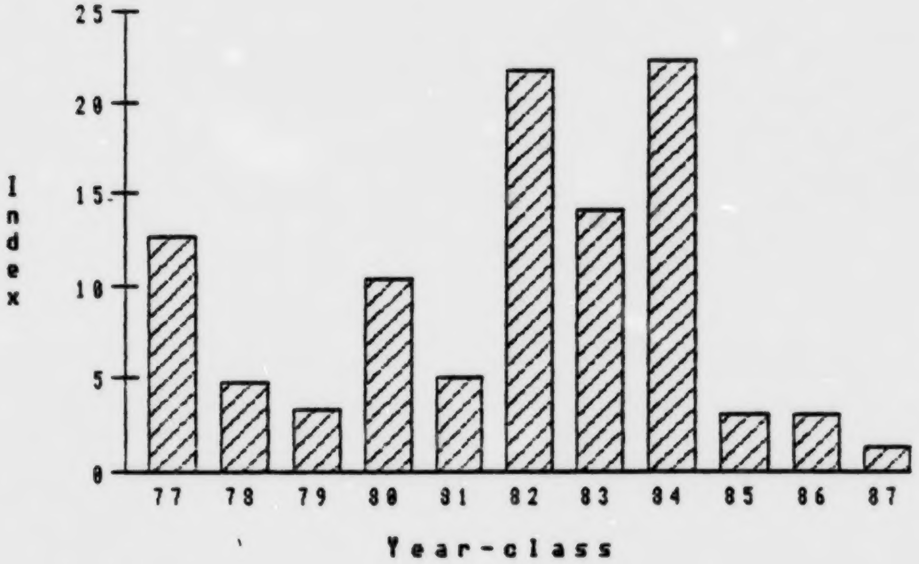


Figure 7. Indices of year-class strength for chub from USFWS trawling in management area 4-5 (LH08), 1981-1989.

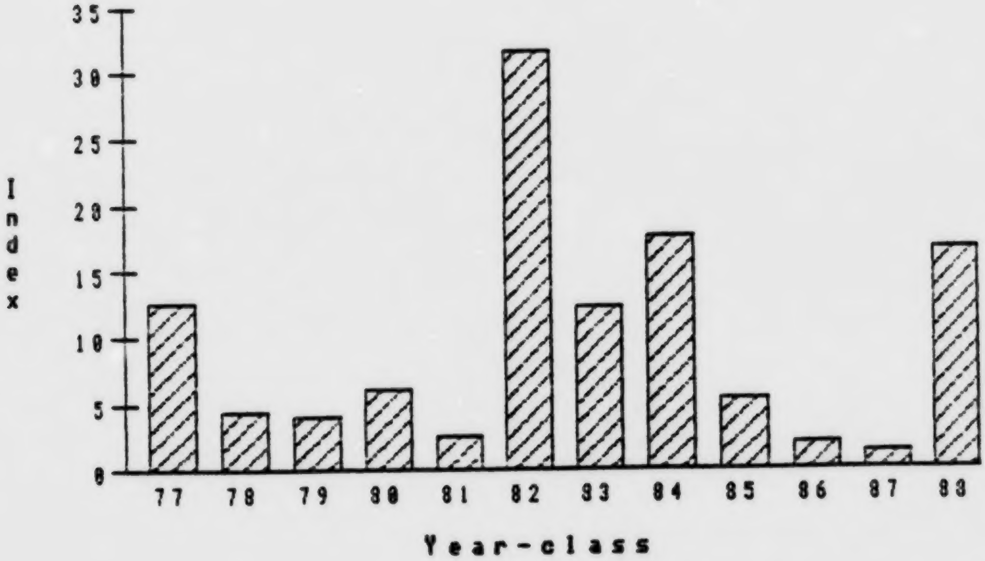


Figure 8. Mean fork length-at-age in June for chub from index gillnetting in management area 4-4 (LH05), 1981-1989.

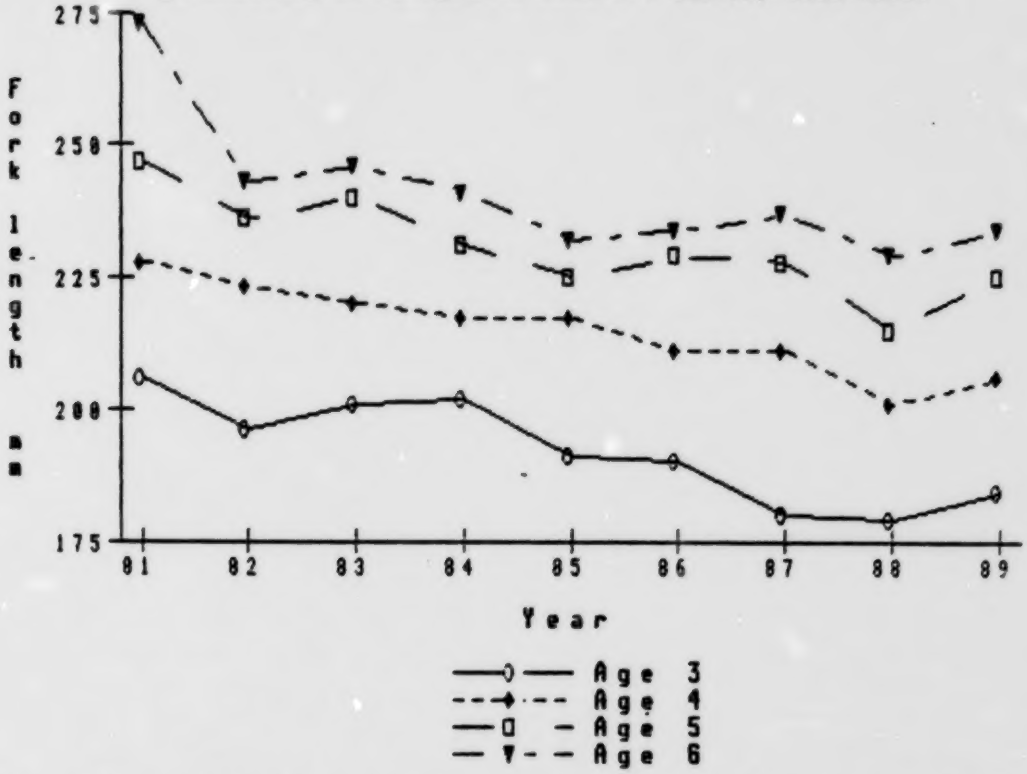


Figure 9. Fork length distributions of age 5, 6 and 7 chub from index gillnetting in LH05, September 1989.

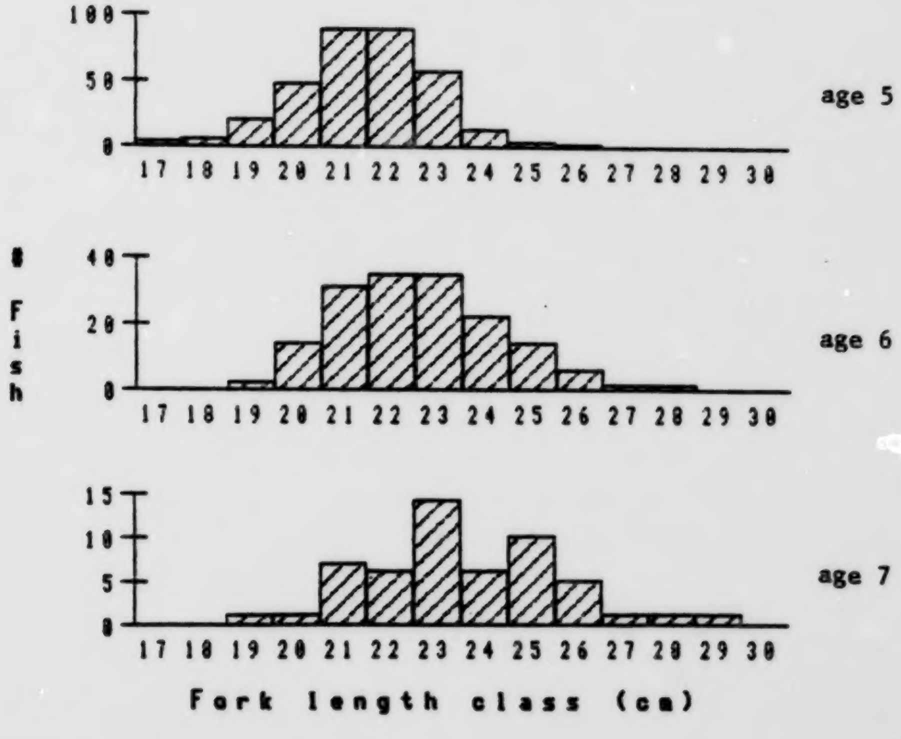


Figure 10. Indices of year-class strength for yellow perch from index gillnetting in management area 4-4 (LH05), 1981-1989.

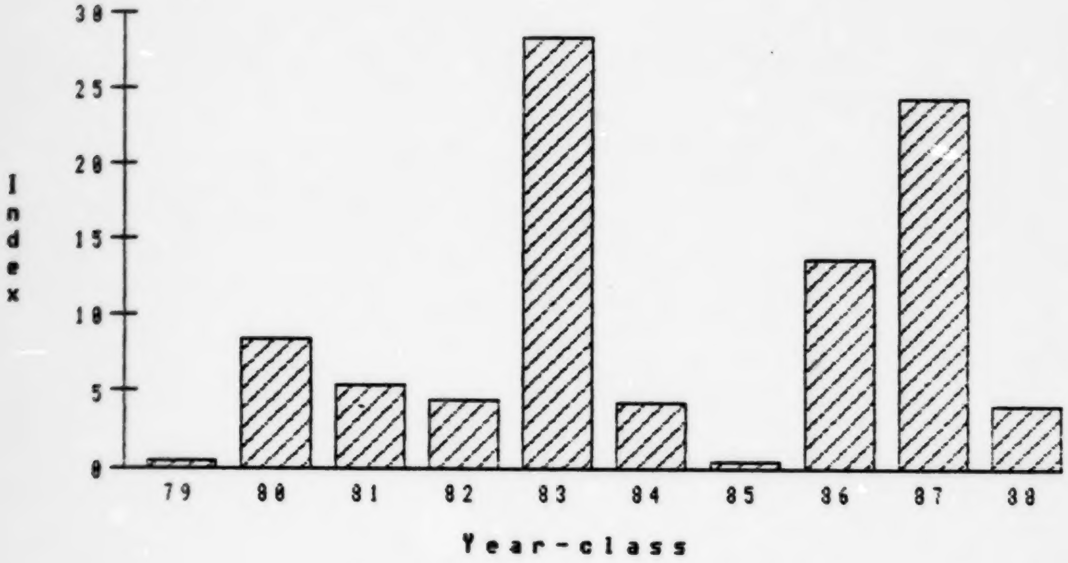


Figure 11. Indices of year-class strength for yellow perch from index gillnetting in management areas 4-5 and 4-6 (LH08-9), 1984-1989.

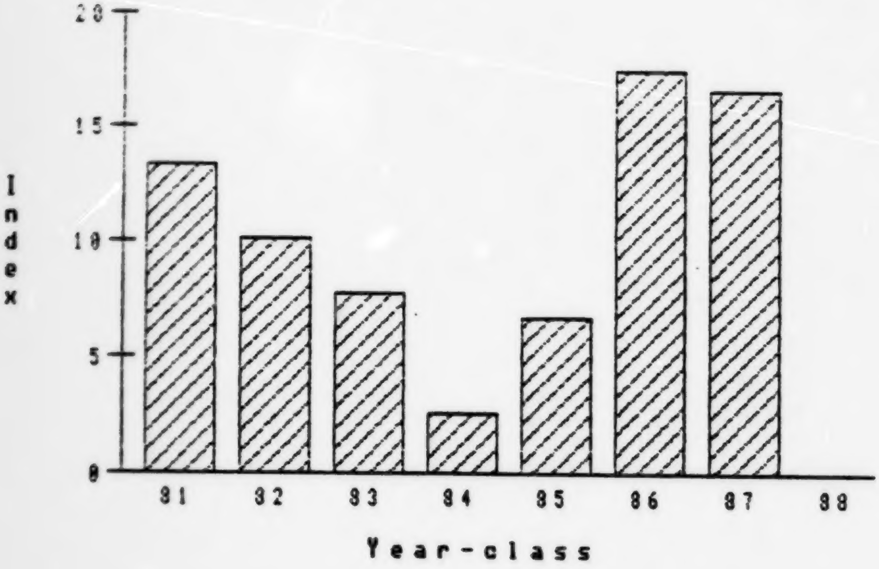


Figure 12. Indices of year-class strength for walleye from index fishing at Tremblay Creek, Lake St. Clair, 1978-1989, for reference to Lake Huron management area 4-6 (LH09). Adjustment shown for 1987 and 1988 year-classes; see text.

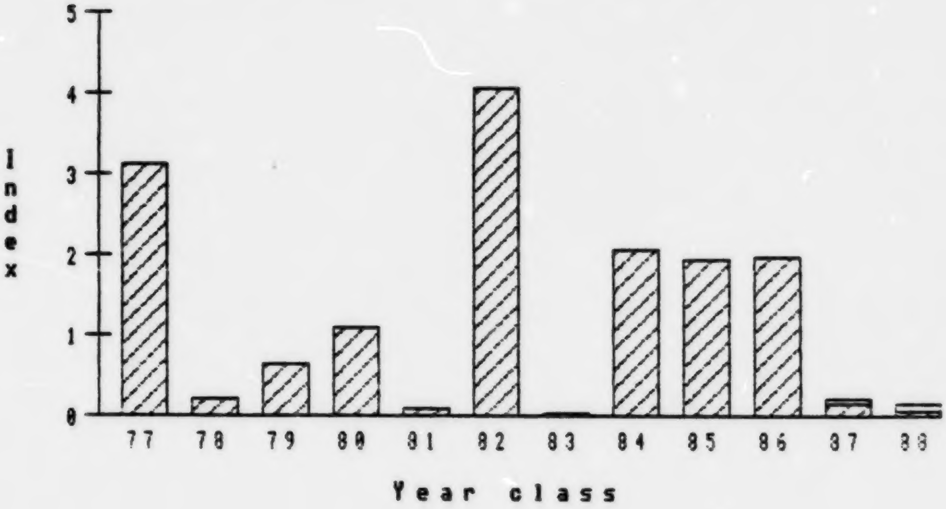


Figure 13. Observed and predicted commercial trapnet CUEs for age 3 walleye in LH09.

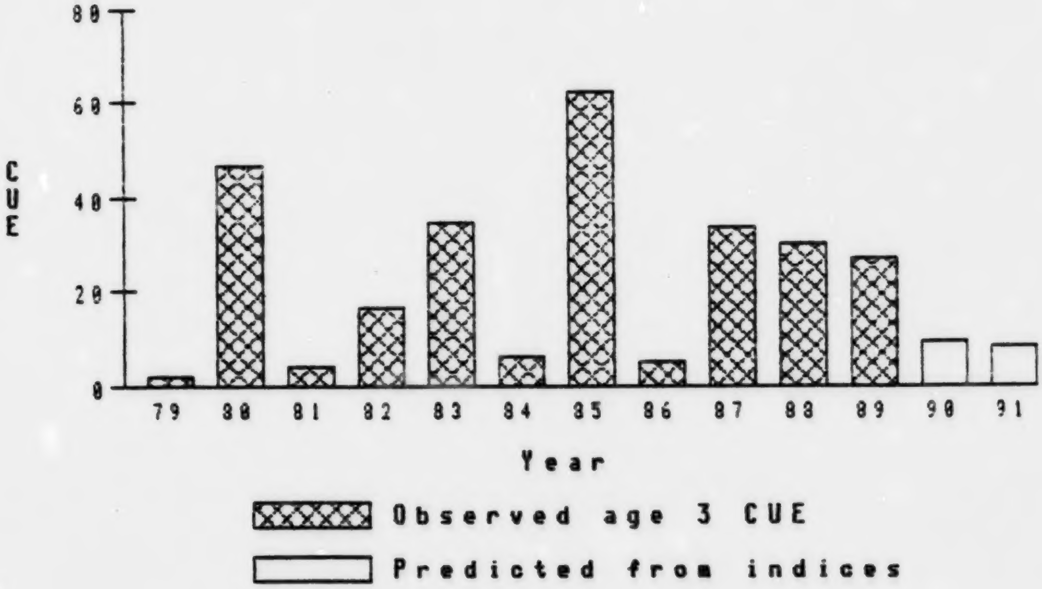


Figure 14. Indices of year-class strength for lake whitefish from index gillnetting in management area 5-8 (GB10), 1978-1989.

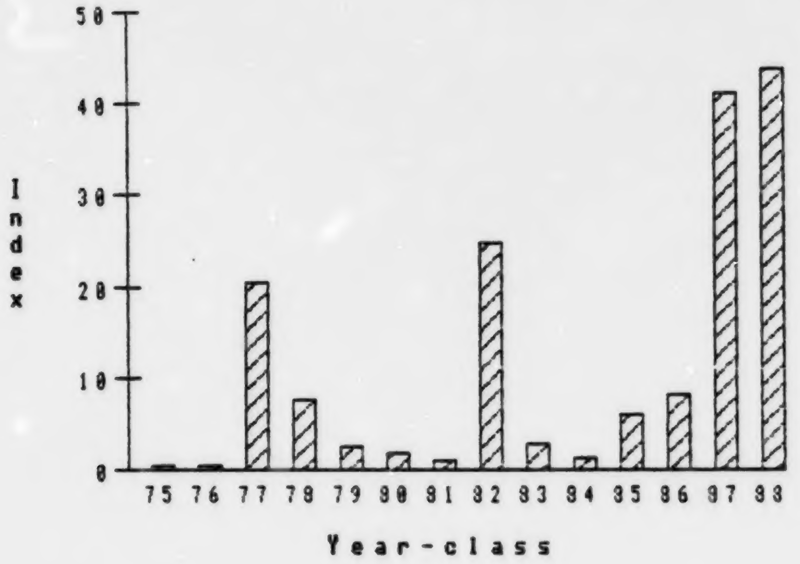


Figure 15. Indices of year-class strength for chub from index gillnetting in management area 5-8 (GB10), 1978-1989.

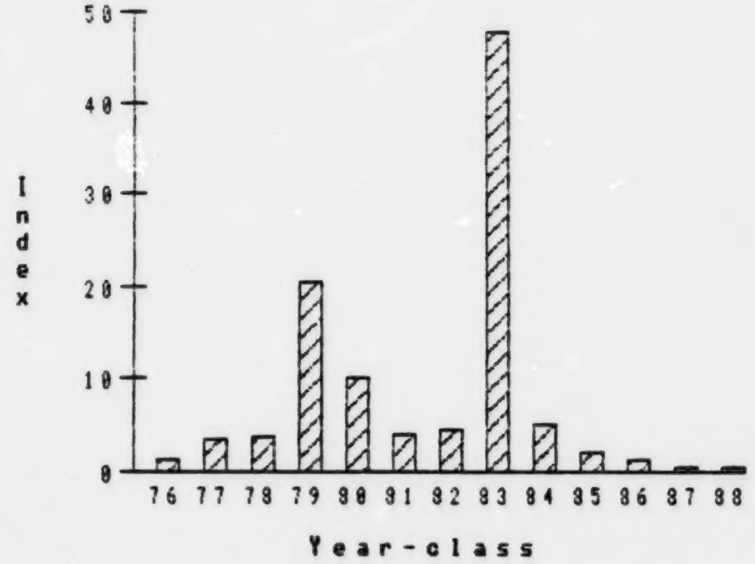


Figure 16. CUEs-at-age for chub in index gillnets in GB03, GB06 and GB09, July 1989.

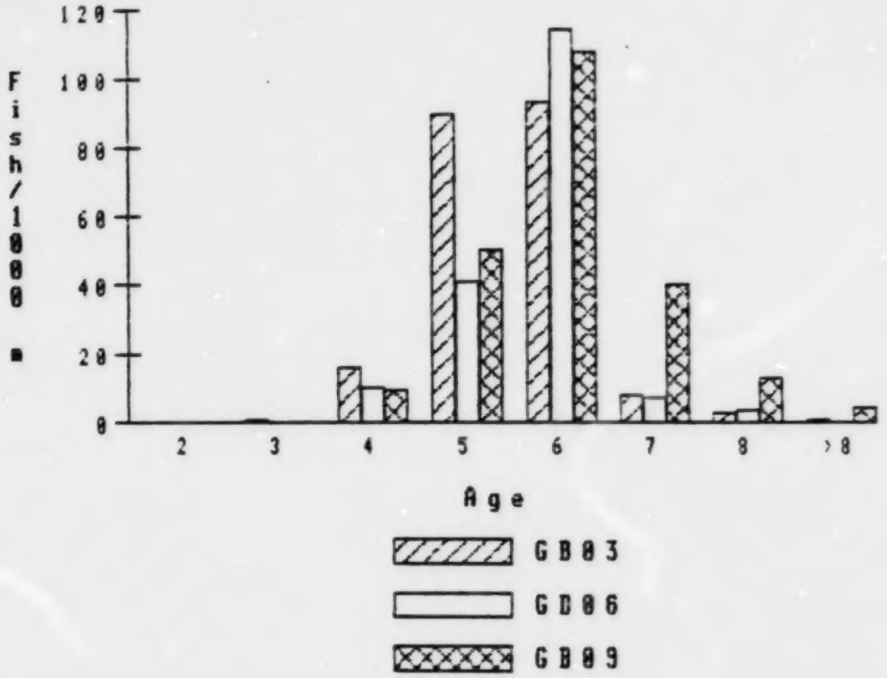


Figure 17. Fork length distributions for age 6 chub (1983 year-class) from index gillnetting in GB03, GB06 and GB09, July 1989.

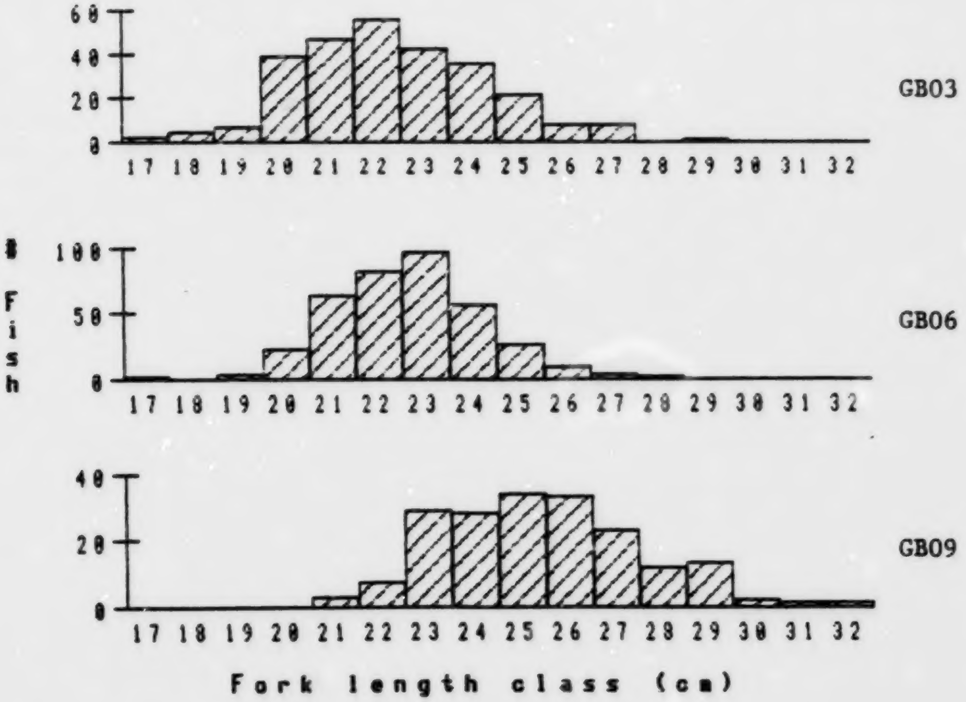


Figure 18. Indices of year-class strength for yellow perch from index gillnetting in management area 5-8 (GB10), 1978-1989.

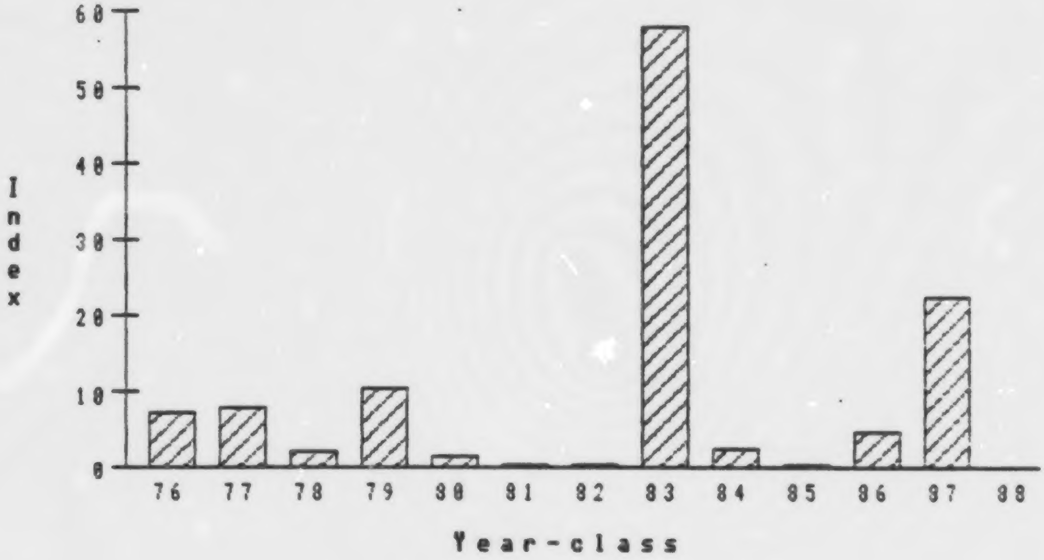
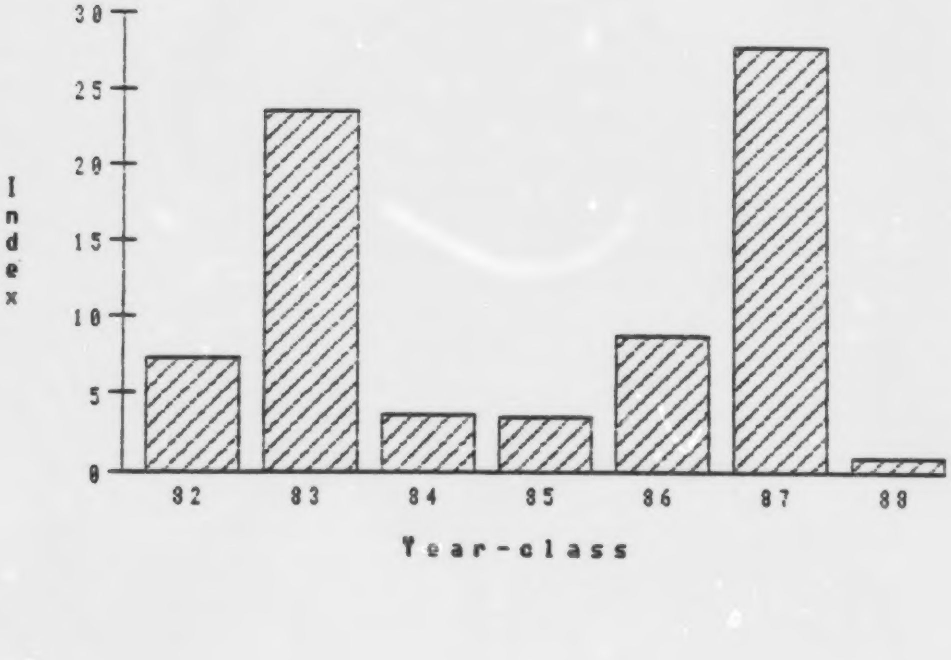


Figure 19. Indices of year-class strength for yellow perch from index gillnetting in management area 6-1 (NC03), 1986-1989.



STOCK PERFORMANCE AND OUTLOOK

LAKE HURON

MANAGEMENT AREA 4-1

Lake Whitefish

- The allocation remained at 71,932 kgs in 1989.
- The harvest dropped 35% to 31,470 kgs, 44% of the 1989 allocation (Fig. 20).
- Effort dropped 24% to 485 kms in 1989 (Fig. 21).
- CUE dropped 15% to 65 kgs/km in 1989 (Fig. 22).
- No age structure data available (see 4-2).
- Abundance unexpectedly dropped in 1989. Catch-at-age data from 4-2 suggests that recruitment of age 4 fish was insufficient to offset the small number of age 5 fish remaining.
- Pre-recruit data from indexing in LH05 suggests recruitment should increase in 1990 and 1991 with the entry of the strong 1986 and 1987 year-classes into the fishery.
- Abundance should increase slightly in 1990 and substantially in 1991.

Chub

- Allocation remained at 20,549 kgs in 1989.
- Harvest rose to 99% of the allocation (Fig. 23).
- Effort increased by 22% to 264 kms in 1989 (Fig. 24).
- CUE stayed at 77 kgs/km in 1989 (Fig. 25).
- Yield rose to 0.55 kgs/ha in 1989 (Fig. 26).
- No age structure data available (see 4-2).
- Abundance apparently did not increase in 1989 as predicted.
- Pre-recruit data from indexing in LH05 suggests that recruitment should remain strong due to continuing entry of the 1983 and 1984 year-classes in 1990. Subsequent year-classes are much weaker so recruitment will decline, possibly as early as 1991.
- Abundance should remain high in 1990 and may begin to decrease in 1991.

Table 1. Round weight (kgs) by species by management area for Lake Huron, 1989.

Species	Area 4-1	Area 4-2	Area 4-3	Area 4-4	Area 4-5	Area 4-6	Area 4-7	Total
Lake sturgeon	0	71	0	0	0	3215	0	3286
Caviar	0	0	0	0	0	77	0	77
Gizzard shad	0	0	0	0	0	149	0	149
Pink salmon	100	277	68	11	82	11	0	549
Lake trout	1471	1274	1691	904	271	14868	31	20510
Lake whitefish	31470	94443	64713	319828	17401	535975	59893	1123723
Lake herring	10	41	307	637	0	22	3	1020
Round whitefish	356	45	259	833	0	333	20	1846
Chub	20414	39142	52317	139482	3777	14933	49596	319661
Rainbow smelt	30	0	0	47	0	30	0	107
Northern pike	0	5	58	0	0	5	0	68
Suckers	1093	5	3332	0	0	5107	317	9854
Carp	136	502	1118	0	0	3801	0	5557
Channel catfish	160	2644	173	2195	8	32498	0	37678
Burbot	4849	925	10977	1360	90	1077	0	19278
White perch	0	0	0	0	2	2296	0	2298
White bass	0	0	0	115	10	5503	0	5628
Rock bass	0	0	0	14	0	102	0	116
Crappie	0	0	0	0	0	0	0	0
Yellow perch	0	0	110	10746	130320	109247	0	250423
Walleye	322	231	45	412	368	110655	82	112115
Freshwater drum	0	46	0	183	4	23246	0	23479
Discarded (mixed)	578	9817	8229	2041	181	181	0	21027
Total	60989	149468	143397	478808	152514	863331	109942	1958449

Table 2. Estimated effort by management area for Lake Huron, 1989.

MANAGEMENT AREA	GILL NET (1000 m)			TRAP NETS
	SMALL MESH	LARGE MESH	TOTAL	(# nets)
4-1	264	507	771	0
4-2	431	939	1370	278
4-3	588	836	1424	0
4-4	1251	1437	2688	0
4-5	1848	97	1945	0
4-6	1764	2224	3988	2063
4-7	512	312	824	0
TOTAL	6658	6352	13010	2341

Table 3. Round weight (kgs) and value ($) by species for management area 4-1 (LH01), 1989.

SPECIES	HARVEST	VALUE
Pink salmon	100	181
Lake trout	1471	4557
Lake whitefish	31470	62124
Lake herring	10	11
Round whitefish	356	320
Chub	20414	51143
Rainbow smelt	30	64
Suckers	1093	0
Carp	136	145
Channel catfish	160	167
Burbot	4849	0
Walleye	322	1349
Discarded (mixed)	578	0

Table 4. Round weight and quota in kilograms by species for management area 4-1 (LH01), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	31470	71932	43.7
Chub	20414	20549	99.3
Yellow perch	0	0	0.0
Walleye	322	519	62.0
Lake trout/backcross	1471	1572	93.6
Northern pike	0	0	0.0
Pink salmon	100	2046	4.9
Sturgeon	0	203	0.0
Channel catfish	160	1287	12.4

Figure 20. Lake whitefish harvest and quota in kilograms for management area 4-1 (LH01), 1979 - 1989.

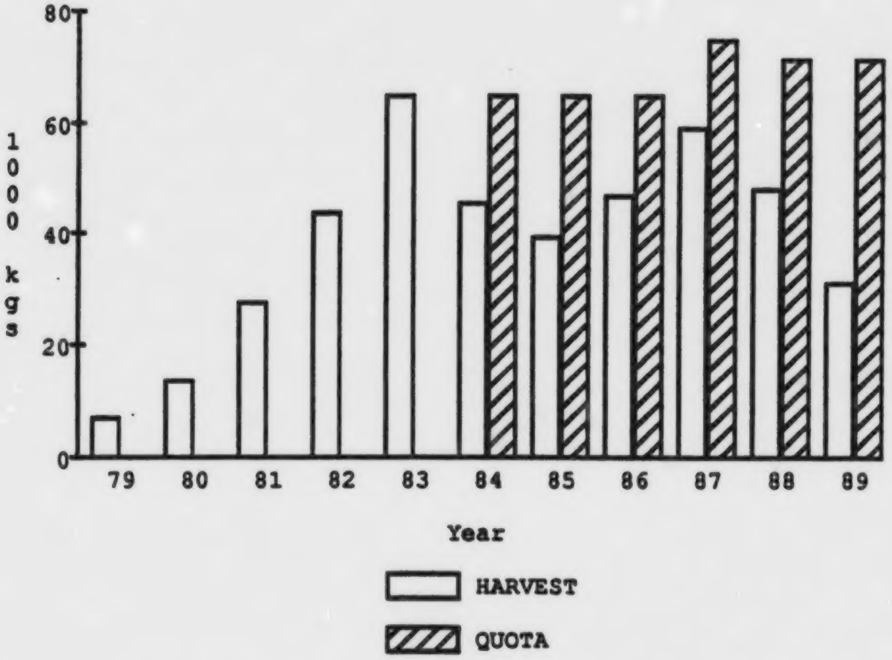


Figure 21. Annual gill net effort (km) for lake whitefish in management area 4-1 (LH01), 1979 - 1989.

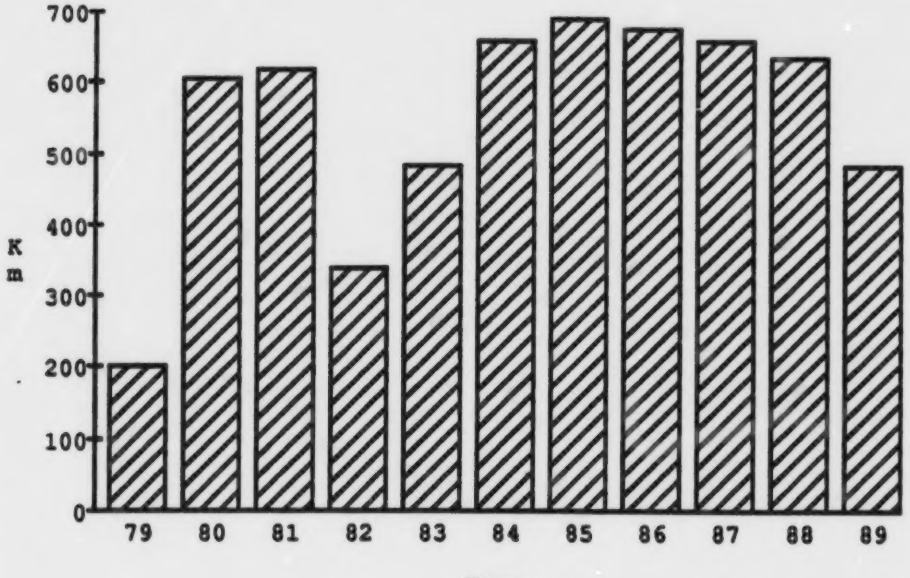


Figure 22. Lake whitefish gill net CUEs (kgs/km) for management area 4-1 (LH01), 1979 - 1989.

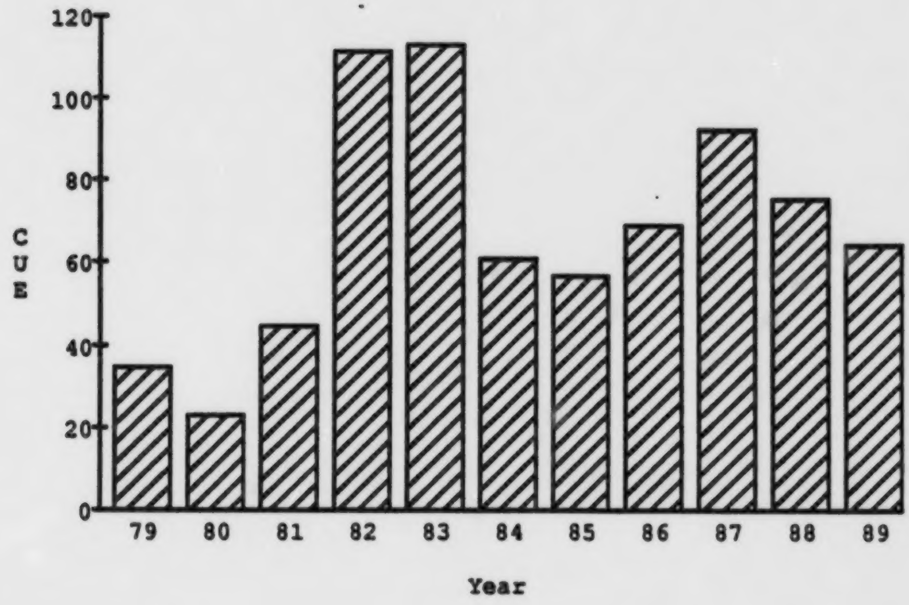


Figure 23. Chub harvest and quota in kilograms for management area 4-1 (LH01), 1979 - 1989.

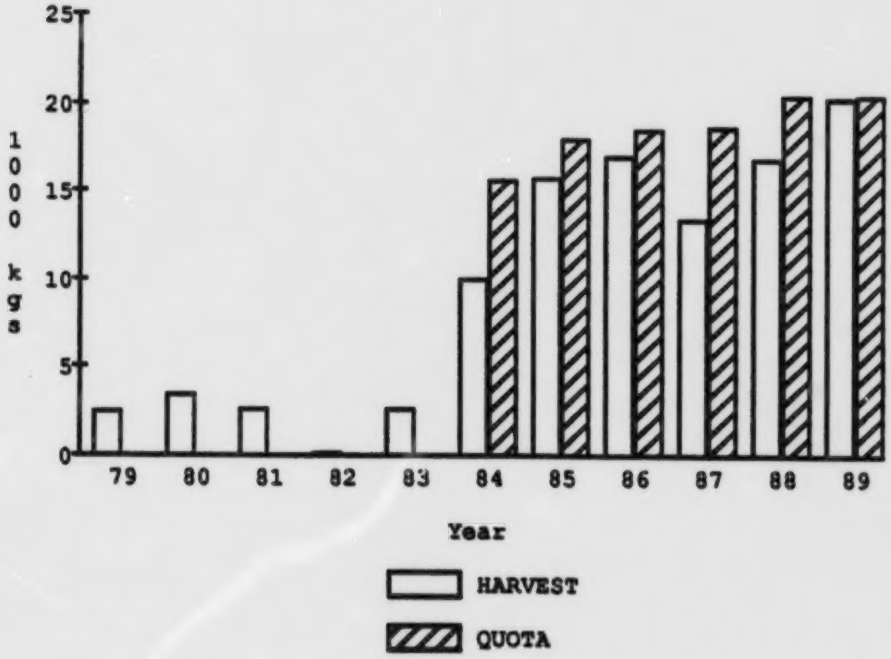


Figure 24. Annual gill net effort (km) for chub in management area 4-1 (LH01), 1979 - 1989.

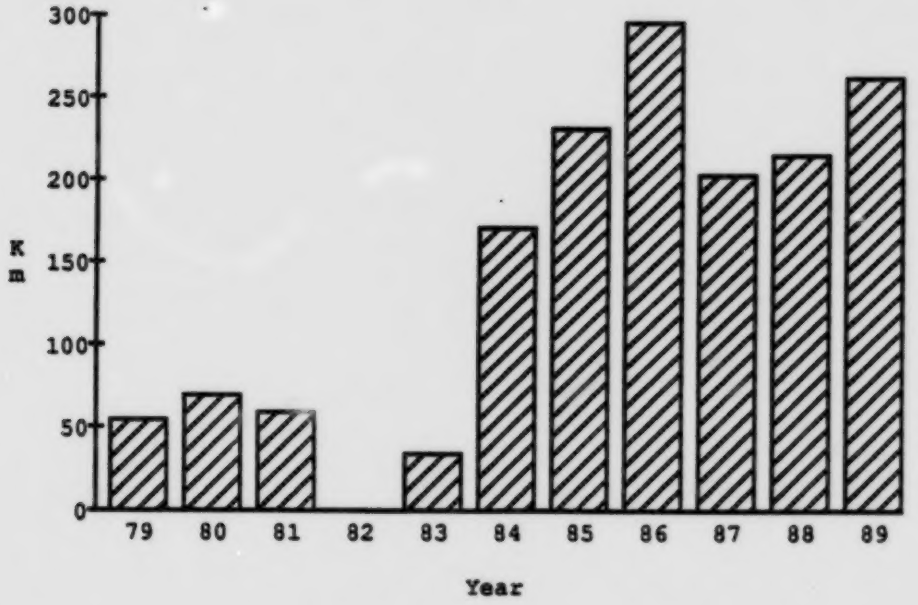


Figure 25. Chub gill net CUEs (kgs/km) for management area 4-1 (LH01), 1979 - 1989.

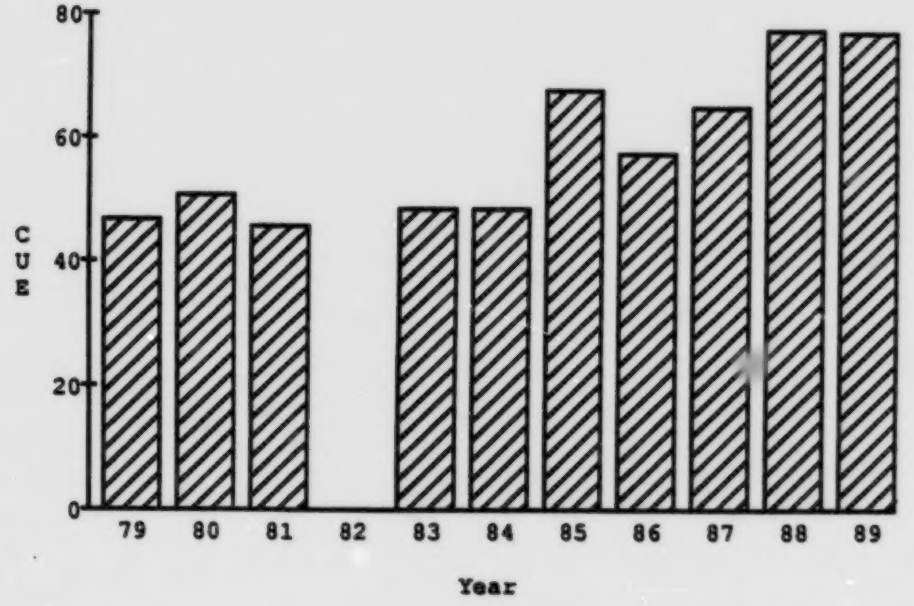
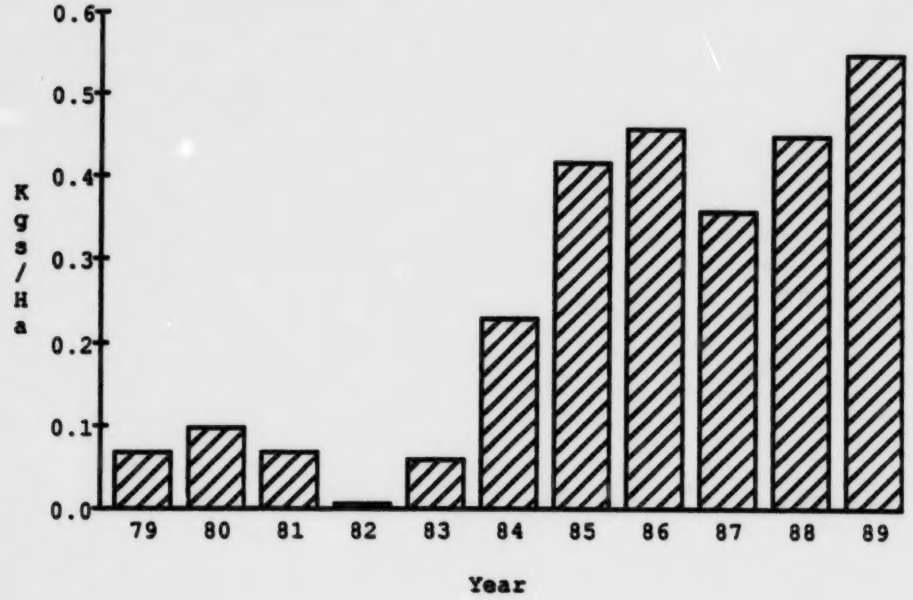


Figure 26. Chub yield (kgs/ha) for management area 4-1 (LH01), 1979 - 1989.



MANAGEMENT AREA 4-2

Lake Whitefish

- Allocation remained at 153,161 kgs in 1989.
- The harvest dropped 35% to 94,443 kgs in 1989, 62% of the allocation (Fig. 27).
- Gill net effort dropped marginally to 938 kms in 1989 (Fig. 28).
- Trap net effort dropped 15% to 228 nets in 1989 (Fig. 29).
- Gill net CUE dropped 24% to 75 kgs/km in 1989 (Fig. 30).
- Trap net CUE dropped 41% to 106 kgs/km in 1989 (Fig. 31).
- Ages 5 and 6 were the dominant age-classes in both the gill and trap net catch in 1989 (Tables 7, 8). The numbers of age 4 fish were well below that expected. Examination of releases from the trap net fishery suggests that the poor showing of age 4 fish is indicative of a weak year-class rather than delayed recruitment.
- Abundance unexpectedly dropped in 1989. Recruitment of age 4 fish was insufficient to offset the small number of age 5 fish remaining.
- Pre-recruit data from indexing in LH05 suggests recruitment should increase in 1990 and 1991 with the entry of the strong 1986 and 1987 year-classes into the fishery.
- Abundance should increase slightly in 1990 and substantially in 1991.

Chub

- Allocation remained at 39,244 kgs in 1989.
- Harvest remained at 100% of the 1989 allocation (Fig. 32).
- Effort dropped by 21% to 431 kms in 1989 (Fig. 33).
- CUE increased by 27% to 91 kgs/km in 1989 (Fig. 34).
- Yield stayed constant at 0.53 kgs/ha (Fig. 35).
- Ages 6,7,8 are dominant age-classes in 1989 continuing the trend towards later recruitment and extended duration of year-classes in the fishery (Table 9).
- Although total abundance increased in 1989 as predicted, that of age 5 fish did not, presumably because of delayed recruitment.
- Pre-recruit data from indexing in LH05 suggests that recruitment should remain strong due to continuing entry of the 1983 and 1984 year-classes in 1990. Subsequent year-classes are much weaker so recruitment will decline, possibly as early as 1991.
- Abundance should remain high in 1990 and may begin to decrease in 1991.

Table 5. Round weight (kgs) and value ($) by species for management area 4-2 (LH02), 1989.

SPECIES	HARVEST	VALUE
Lake sturgeon	71	584
Pink salmon	277	531
Lake trout	1274	4574
Lake whitefish	94443	242582
Lake herring	41	36
Round whitefish	45	22
Chub	39142	110963
Northern pike	5	14
Suckers	5	5
Carp	502	462
Channel catfish	2644	2330
Burbot	925	0
Walleye	231	904
Freshwater drum	46	42
Discarded (mixed)	9817	10

Table 6. Round weight and quota in kilograms by species for management area 4-2 (LH02), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	94443	153161	61.7
Chub	39142	39224	99.8
Yellow perch	0	250	0.0
Walleye	231	373	61.9
Lake trout/backcross	1274	1356	94.0
Northern pike	5	129	3.9
Pink salmon	277	1591	17.4
Sturgeon	71	357	19.9
Channel catfish	2644	3106	85.1

Figure 27. Lake whitefish harvest and quota in kilograms for management area 4-2 (LH02), 1979 - 1989.

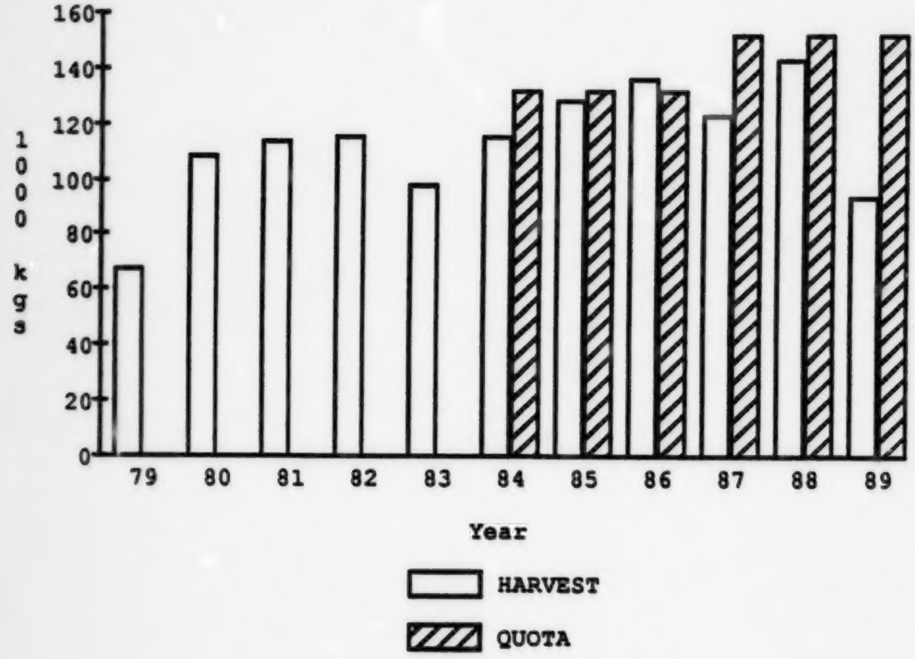


Figure 28. Annual gill net effort (km) for lake whitefish in management area 4-2 (LH02), 1979 - 1989.

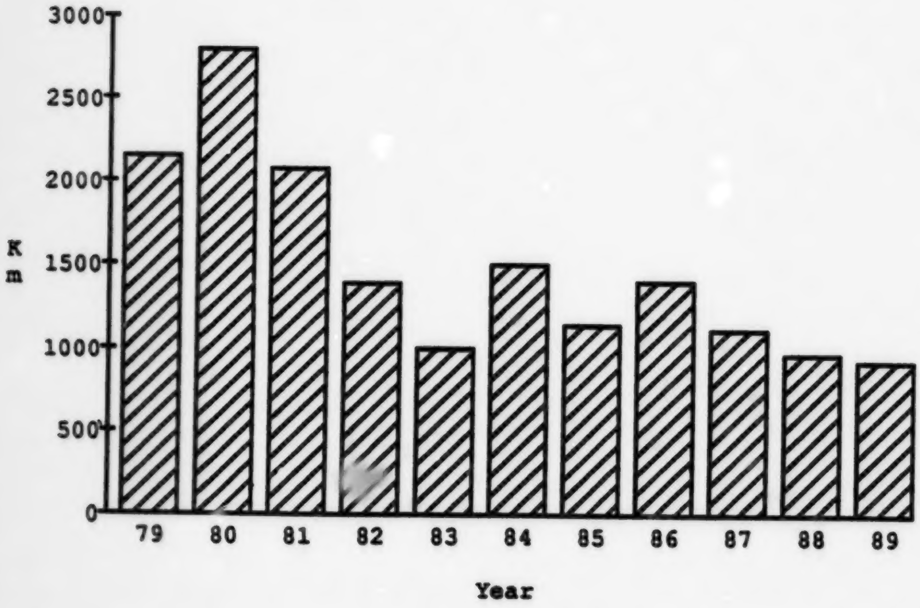


Figure 29. Annual trap net effort (# of nets) for lake whitefish in management area 4-2 (LH02), 1979 - 1989.

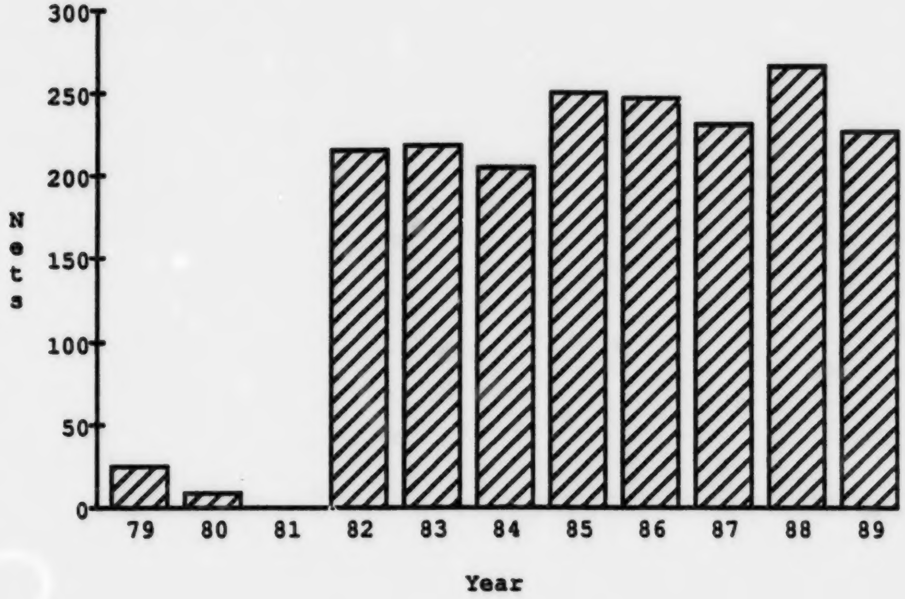


Figure 30. Lake whitefish gill net CUEs (kgs/km) for management area 4-2 (LH02), 1979 - 1989.

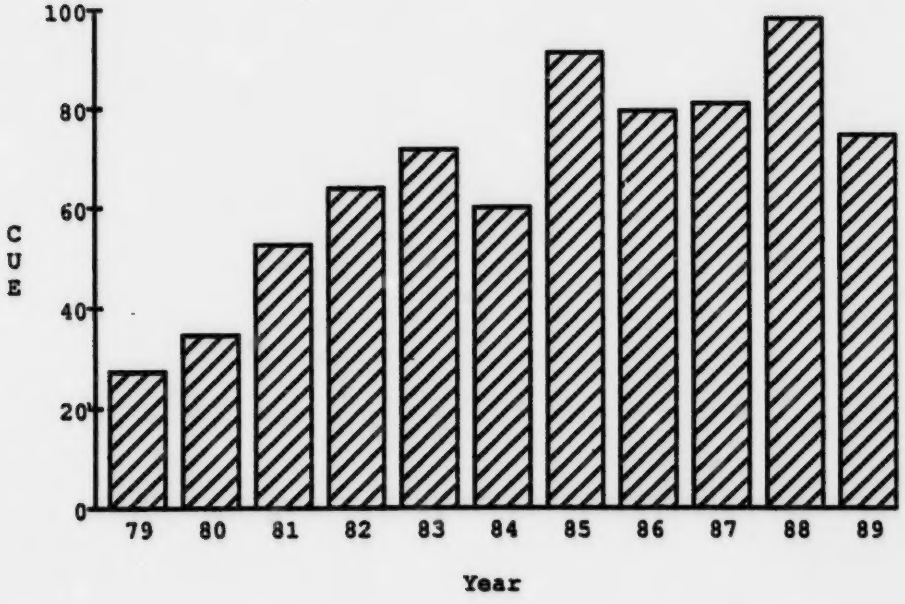


Figure 31. Lake whitefish trap net CUEs (kgs/net) for management area 4-2 (LH02), 1979 - 1989.

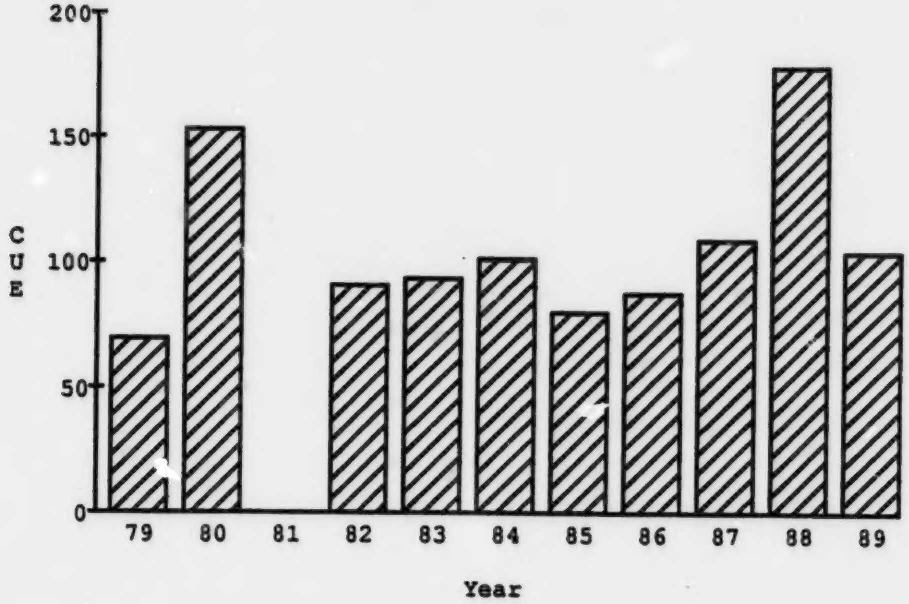


Table 7. Age-class composition of lake whitefish caught in gill nets in management area 4-2 (LH02), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0		0	0	0	0	0
2	31	0	0	0	0		0	0	0	0	0
3	1366	6814	3549	159	0		541	981	0	0	1546
4	22621	31813	67666	14508	5638		8423	39964	19443	5367	7533
5	10942	21979	15416	45633	35376		61822	41661	33378	53462	17481
6	4817	4444	3004	3647	12649		12463	11875	17924	15499	19117
7	2348	2295	464	581	582		2405	1149	6460	1989	3220
8	126	1515	605	581	0		861	215	801	1574	1131
9	100	0	304	843	0		71	237	83	0	407
10	0	133	54	0	0		0	0	0	348	206
11	0	0	197	0	0		143	0	0	0	0
12	31	133	54	0	0		0	0	0	97	0
13	0	0	0	0	0		0	0	0	0	0
>13	0	133	0	0	0		0	0	0	0	0

Table 8. Age-class composition of lake whitefish caught in trap nets in management area 4-2 (LH02), 1982 - 1989.

AGE	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	35
3	99	93	102	783	884	359	472	1097
4	7487	7698	5485	4023	8917	12123	9505	2993
5	7280	7154	10066	8759	7617	7402	22245	3952
6	733	1471	3221	2544	2930	2703	5289	5176
7	66	53	432	278	354	946	2074	2053
8	78	0	20	247	67	208	575	505
9	117	111	20	0	0	26	0	143
10	115	35	20	0	41	44	0	0
11	0	146	0	0	0	0	177	26
12	0	18	0	0	0	26	50	0
13	0	0	0	43	0	0	0	0
>13	49	18	0	0	0	0	0	0

Figure 32. Chub harvest and quota in kilograms for management area 4-2 (LH02), 1979 - 1989.

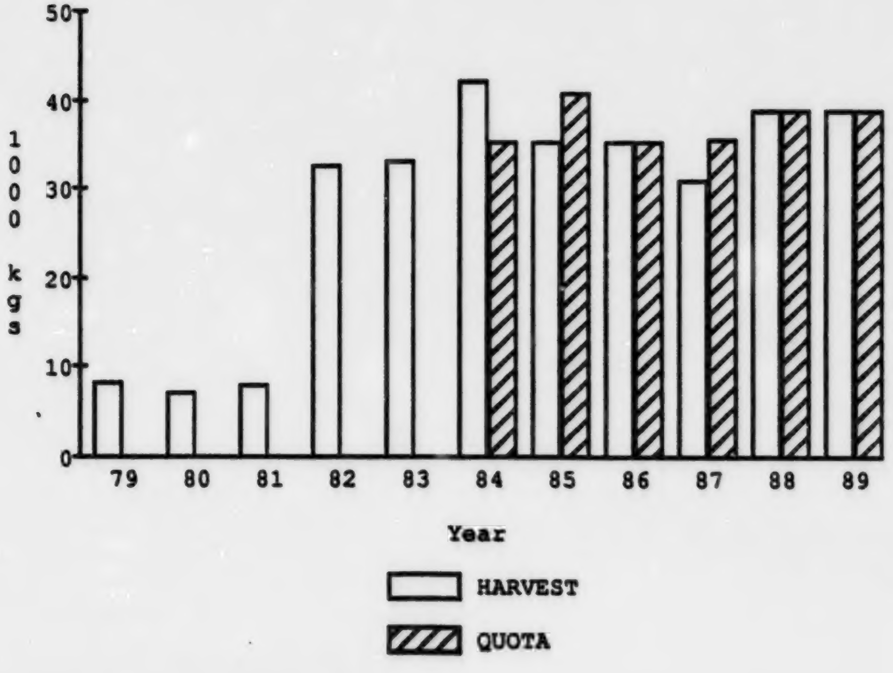


Figure 33. Annual gill net effort (km) for chub in management area 4-2 (LH02), 1979 - 1989.

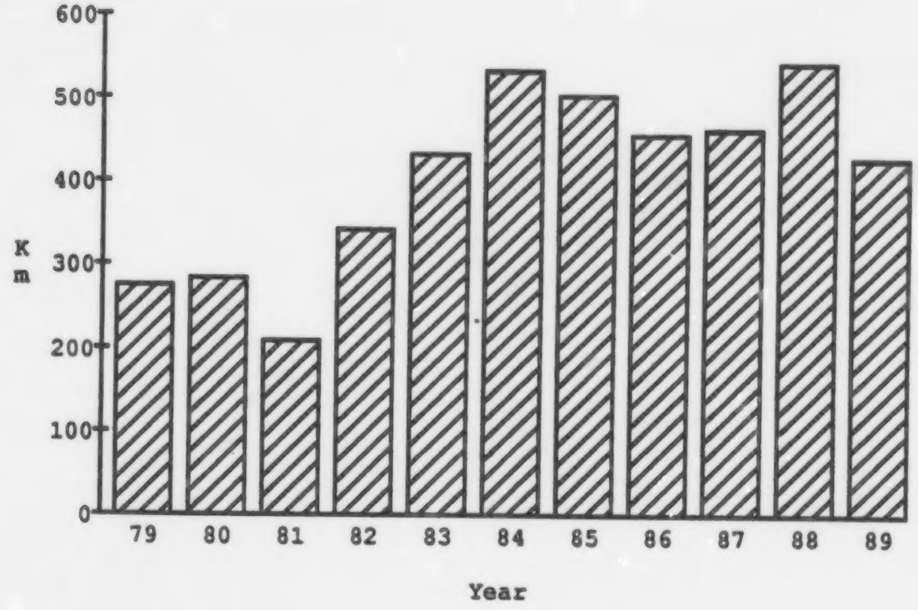


Figure 34. Chub gill net CUEs (kgs/km) for management 4-2 (LH02), 1979 - 1989.

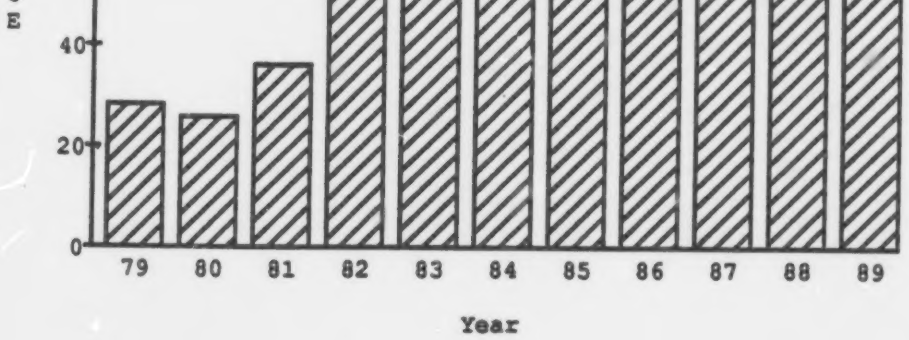


Figure 35. Chub yield (kgs/ha) for management area 4-2 (LH02), 1979 - 1989.

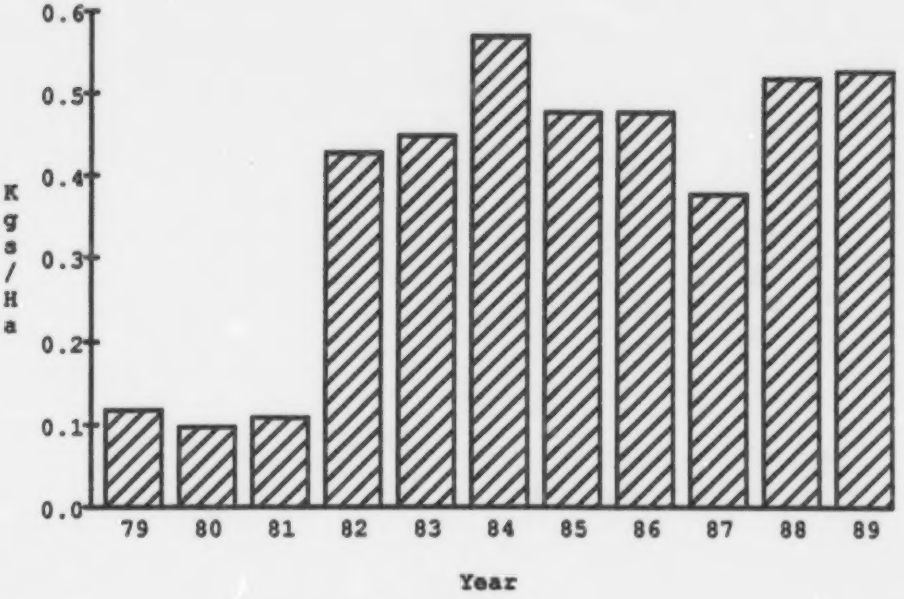


Table 9. Age-class composition of chub caught in gill nets in management area 4-2 (LH02), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	0	0	0	0	0	0
2	272	0	0	0	0	0	0	0	0	0	0
3	195	2616	1164	0	1648	0	448	491	140	0	0
4	2838	3151	19665	31040	17128	11187	3125	6227	4431	1174	0
5	4560	3658	5713	76945	66859	23422	47056	23367	19777	32232	7890
6	13394	7450	3520	10632	49921	112315	44152	58124	37306	62628	59075
7	5512	8665	2329	5907	4150	42223	59211	45853	50572	58354	62494
8	2146	1763	3688	8093	3028	2932	14192	29792	26577	24206	43380
9	1002	501	939	9973	1599	1120	4700	5655	6143	6799	15810
10	599	140	385	1331	1490	0	89	0	440	1497	4630
11	154	0	48	330	109	0	589	0	60	312	379
12	0	140	0	0	0	0	89	341	0	0	0
13	250	0	0	0	0	0	52	0	0	0	0
>13	77	0	0	0	109	0	0	0	0	0	0

MANAGEMENT AREA 4-3

Lake Whitefish

- Allocation dropped slightly to 98,194 kgs in 1989.
- The harvest dropped 6% to 64,713 kgs in 1989, 66% of the allocation (Fig. 36).
- Effort increased marginally to 832 kms in 1989 (Fig. 37).
- CUE dropped 9% to 78 kgs/km in 1989 (Fig. 38).
- Ages 5 and 6 were the dominant age-classes in 1989 (Table 12). The numbers of age 4 fish were well below that expected.
- Abundance did not increase in 1989 as predicted. Recruitment of age 4 fish was insufficient to offset the small number of age 5 fish remaining.
- Pre-recruit data from indexing in LH05 suggests recruitment should increase in 1990 and 1991 with the entry of the strong 1986 and 1987 year-classes into the fishery.
- Abundance should increase slightly in 1990 and substantially in 1991.

Chub

- Allocation remained at 59,371 kgs in 1989.
- Harvest rose to 52,317 kgs, approximately 88% of the allocation in 1989 (Fig. 39).
- Effort dropped by 11% to 587 kms in 1989 (Fig. 40).
- CUE increased by 25% to 89 kgs/km in 1989 (Fig. 41).
- Yield rose to 0.52 kgs/ha in 1989 (Fig. 42).
- Ages 5,6,7,8 were dominant age-classes in 1989 continuing the trend towards later recruitment (Table 13). Examination of commercial discards (2% of catch in 1989) suggests that the poor showing of age 4 fish is indicative of a weak year-class rather than delayed recruitment.
- Abundance increased in 1989 as predicted with the continued recruitment of three year-classes (1982, 1983, 1984).
- Pre-recruit data from indexing in LH05 suggests that recruitment should remain strong due to continuing entry of the 1983 and 1984 year-classes in 1990. Subsequent year-classes are much weaker so recruitment will decline in 1991.
- Abundance should remain high in 1990 and may begin to decrease in 1991.

Table 10. Round weight (kgs) and value ($) by species for management area 4-3 (LH03), 1989.

SPECIES	HARVEST	VALUE
Pink salmon	68	71
Lake trout	1691	3301
Lake whitefish	64713	145279
Lake herring	307	295
Round whitefish	259	218
Chub	52317	128089
Northern pike	58	136
Suckers	3332	19
Carp	1118	686
Channel catfish	173	128
Burbot	10977	0
Yellow perch	110	232
Walleye	45	122
Discarded (mixed)	8229	0

Table 11. Round weight and quota in kilograms by species for management area 4-3 (LH03), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	64713	98194	65.9
Chub	52317	59371	88.1
Yellow perch	110	3248	3.4
Walleye	45	800	5.6
Lake trout/backcross	1691	1871	90.4
Northern pike	58	902	6.4
Pink salmon	68	1729	3.9
Sturgeon	0	244	0.0
Channel catfish	173	999999	0.0

Figure 36. Lake whitefish harvest and quota in kilograms for management area 4-3 (LH03), 1979 - 1989.

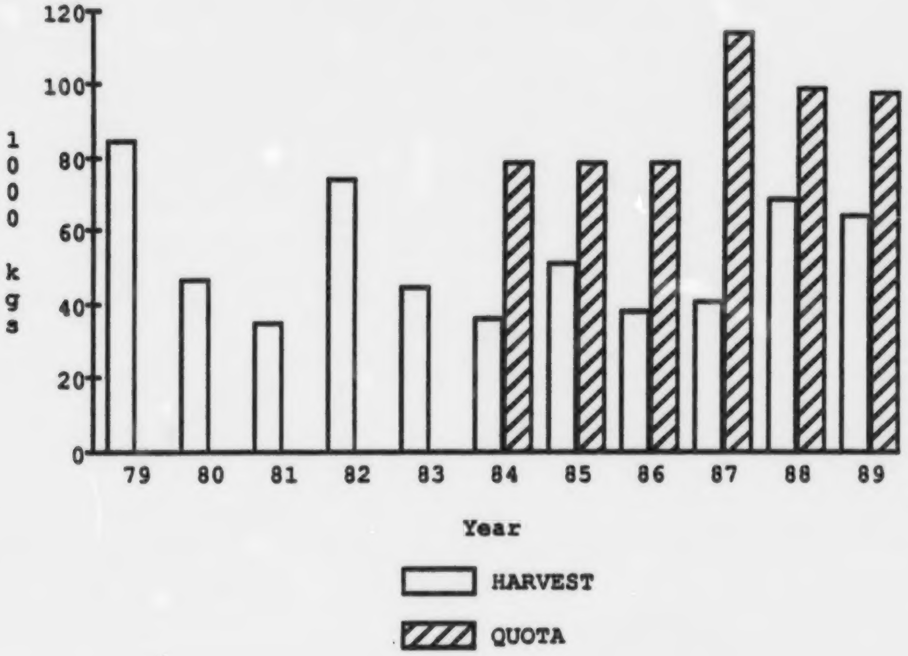


Figure 37. Annual gill net effort (km) for lake whitefish in management area 4-3 (LH03), 1979 - 1989.

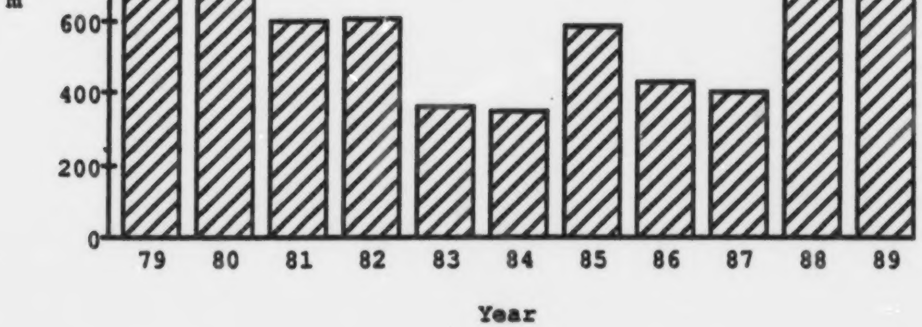


Figure 38. Lake whitefish gill net CUEs (kgs/km) for management area 4-3 (LH03), 1979 - 1989.

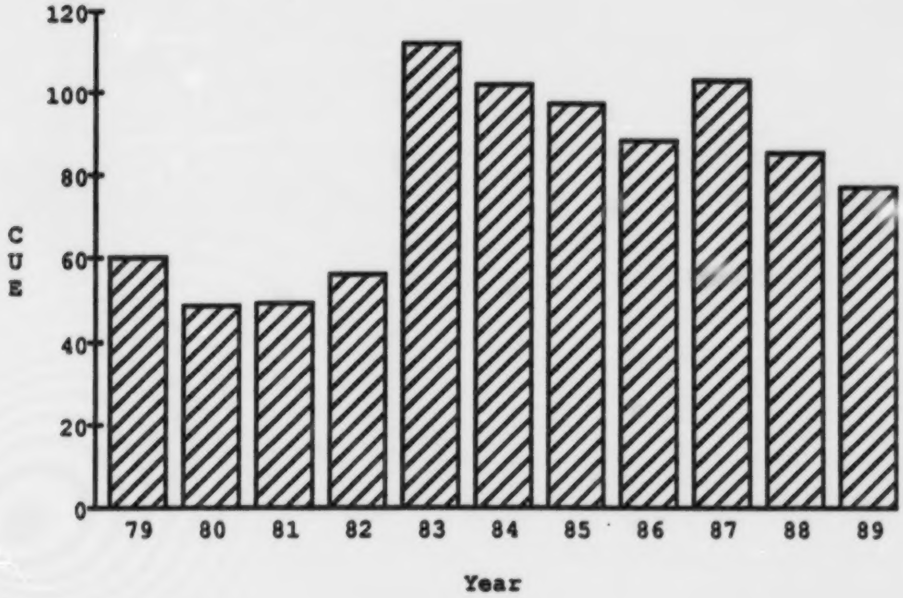


Table 12. Age-class composition of lake whitefish caught in gill nets in management area 4-3 (LH03), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0		0	0	0		0	0
2	167	0	0	0		0	0	0		0	0
3	5787	5851	84	766		569	365	52		163	231
4	31496	12626	19693	10699		16359	5231	7915		5287	5805
5	13142	12671	3428	14998		10448	24562	8621		22619	12722
6	4995	2470	3426	957		1559	7433	5053		16525	15430
7	3222	1165	678	326		1080	2265	2254		3064	6422
8	504	938	367	49		0	2260	935		658	1384
9	323	96	395	126		71	68	1233		123	579
10	96	0	114	49		0	0	86		172	250
11	72	72	0	0		0	0	52		93	0
12	0	0	0	0		0	0	0		0	0
13	0	72	0	0		0	0	0		0	0
>13	0	0	0	0		0	0	0		0	0

Figure 39. Chub harvest and quota in kilograms for management area 4-3 (LH03), 1979 - 1989.

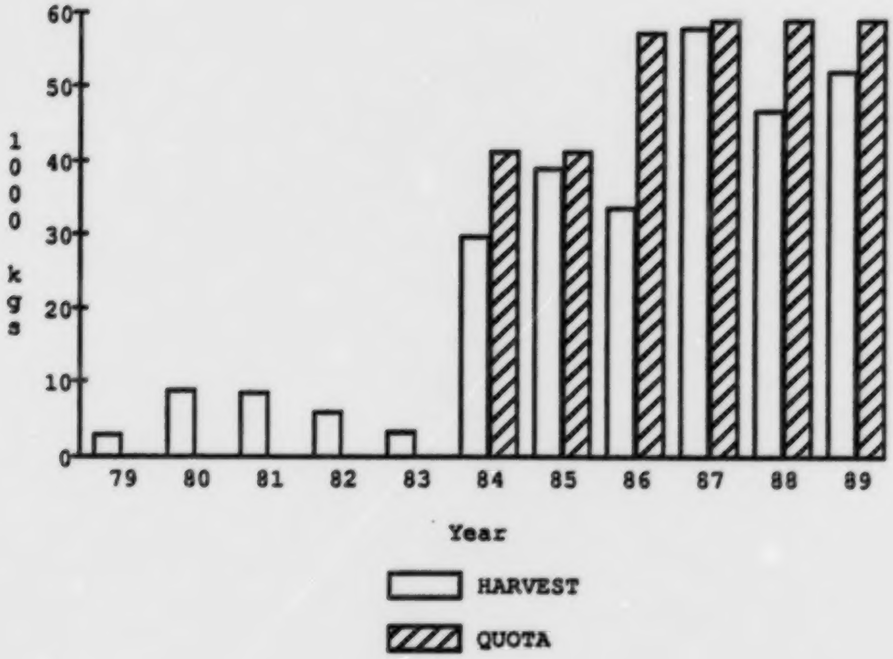


Figure 40. Annual gill net effort (km) for chub in management area 4-3 (LH03), 1979 - 1989.

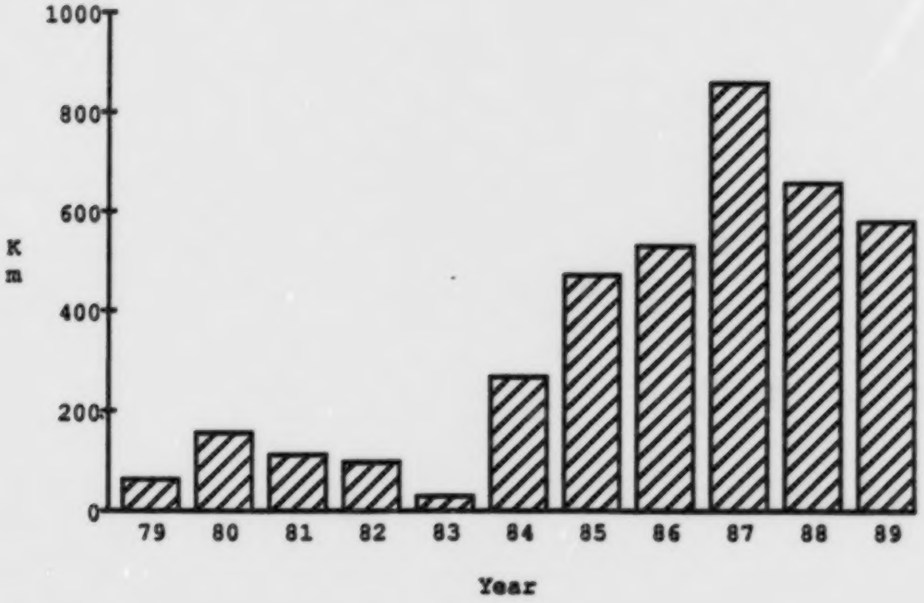


Figure 41. Chub gill net CUEs (kgs/km) for management area 4-3 (LH03), 1979 - 1989.

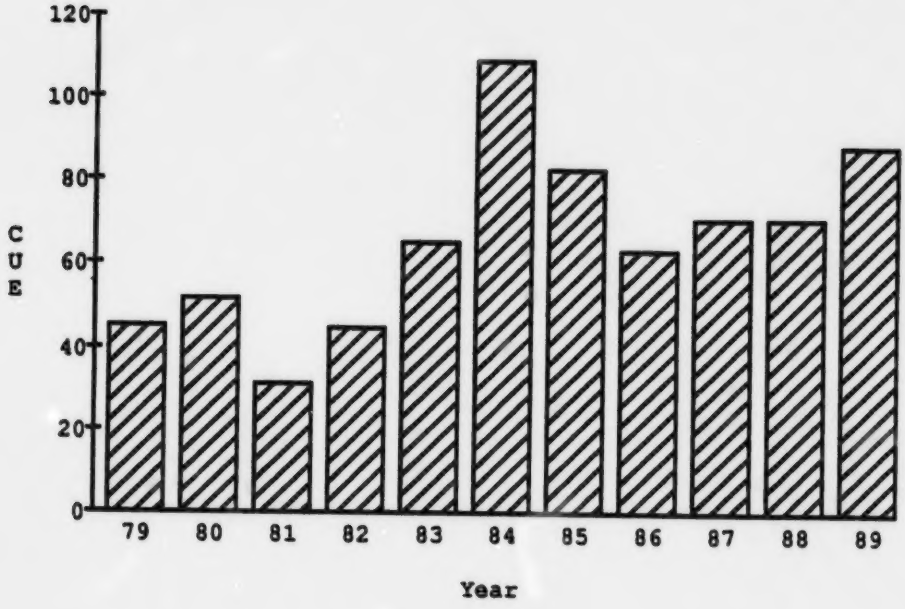


Figure 42. Chub yield (kgs/ha) for management area 4-3 (LH03), 1979 - 1989.

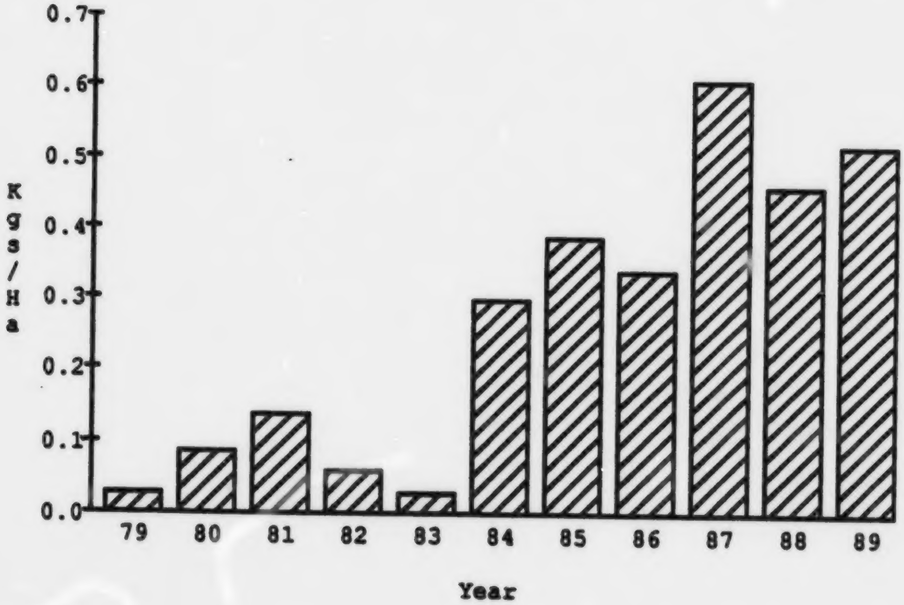


Table 13. Age-class composition of chub caught in gill nets in management area 4-3 (LH03), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0				0	0	0		0	0
2	0	148				0	0	0		0	0
3	48	6797				0	0	663		0	0
4	702	7535				34179	2417	11925		5351	746
5	1083	5642				53140	31947	19555		62638	22137
6	6016	7266				47162	28788	53775		71758	90033
7	2397	8608				14634	78721	47403		61718	88014
8	1049	2558				584	38269	27383		30174	38208
9	635	641				0	1315	8115		6237	8429
10	567	360				3160	3044	766		480	4150
11	116	212				2576	0	536		0	298
12	150	0				2576	0	0		0	0
13	82	0				0	0	0		0	0
>13	164	0				0	0	0		0	0

MANAGEMENT AREA 4-4

Lake Whitefish

- Allocation remained at 327,495 kgs in 1989.
- The harvest rose 11% to 319,828 kgs in 1989, 98% of the allocation (Fig. 43).
- Harvest increased by 8% to 283,154 kgs in LH05 (Fig. 44) and 37% to 36,672 kgs in LH06 (Fig. 45) in 1989.
- Effort increased 18% to 1,210 kms in LH05 (Fig. 46), while dropping 12% to 146 kms in LH06 (Fig. 47) in 1989.
- CUE dropped 8% to 234 kgs/km in LH05 (Fig. 48), while increasing 56% to 262 kgs/km in LH06 (Fig. 49) in 1989.
- Ages 4 and 5 were the dominant age-classes in 1989 (Table 16).
- Abundance did not increase in 1989 as predicted, primarily the result of a poorer than expected contribution of the 1986 year-class.
- Pre-recruit data from indexing in LH05 indicates that the poor showing of the 1986 year-class was the result of depressed growth delaying entry into the fishery. Recruitment should increase in both 1990 and 1991 with the entry of the strong 1986 and 1987 year-classes into the fishery.
- Abundance should increase in both 1990 and 1991.

Chub

- Allocation remained at 234,896 kgs in 1989.
- Harvest dropped to 139,482 kgs, approximately 59% of the 1989 allocation (Fig. 50).
- Harvest increased by 4% to 94,352 kgs in LH05 (Fig. 51) and dropped 28% to 45,127 kgs in LH06 (Fig. 52) in 1989. Interestingly, harvest in LH07 plunged from 51,529 kgs in 1988 to 0 kgs in 1989 (Fig. 53).
- Effort dropped 16% to 682 kms in LH05 (Fig. 54) and 54% to 138 kms in LH06 (Fig. 55) in 1989.
- CUE increased 24% to 138 kgs/km in LH05 (Fig. 57) and 58% to 134 kgs/km in LH06 (Fig. 58) in 1989.
- Yield rose to 0.91 kgs/ha in LH05 (Fig. 60), while dropping to 0.67 kgs/ha in LH06 in 1989 (Fig. 61).
- Ages 5,6 and 7 were the mainstay of the fishery in both areas in 1989, continuing the trend towards later recruitment (Tables 17, 18). Examination of commercial discards (4% of catch in 1989) suggests that the poor showing of age 4 fish is indicative of a weak year-class rather than delayed recruitment.
- Abundance increased in 1989 as predicted with the continued recruitment of three year-classes (1982, 1983 and 1984).
- Pre-recruit data from indexing in LH05 suggests that recruitment should remain strong due to continuing entry of the 1983 and 1984 year-classes in 1990. Subsequent year-classes are much weaker so recruitment will decline in 1991.
- Abundance should remain high in 1990 and may begin to decrease in 1991.

Yellow perch

- Allocation dropped 10% to 18,327 kgs in 1988.
- The harvest rose 42% to 10,746 kgs, 59% of the 1989 allocation (Fig. 63).
- Harvest increased by 104% to 6,888 kgs in LH05 (Fig. 64) and 33% to 3,854 kgs in LH06 (Fig. 65) in 1989.

- Effort rose 55% to 219 kms in LH05 (Fig. 66) and dropped 50% to 40 kms in LH06 (Fig. 67) in 1989.
- CUE increased 24% to 138 kgs/km in LH05 (Fig. 68) and 58% to 134 kgs/km in LH06 (Fig. 69) in 1989.
- Abundance unexpectedly increased in 1989.
- Pre-recruit data from indexing in LH05 indicates that recruitment should increase in 1990 and 1991 as the strong 1986 and 1987 year-classes enter the fishery.
- Abundance should increase in both 1990 and 1991.

Table 14. Round weight (kgs) and value ($) by species for management area 4-4 (LH05, LH06, LH07), 1989.

SPECIES	HARVEST	VALUE
Pink salmon	11	20
Lake trout	904	2900
Lake whitefish	319828	780695
Lake herring	637	562
Round whitefish	833	507
Chub	139482	251154
Rainbow smelt	47	20
Channel catfish	2195	1814
Burbot	1360	0
White bass	115	82
Rock bass	14	7
Yellow perch	10746	41462
Walleye	412	1591
Freshwater drum	183	102
Discarded (mixed)	2041	0

Table 15. Round weight and quota in kilograms by species for management area 4-4 (LH05, LH06, LH07), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	319828	327495	97.7
Chub	139482	234896	59.4
Yellow perch	10746	18327	58.6
Walleye	412	742	55.5
Lake trout/backcross	904	1582	57.1
Northern pike	47	393	12.0
Pink salmon	11	1456	0.8
Sturgeon	0	100	0.0
Channel catfish	2195	999999	0.2

Figure 43. Lake whitefish harvest and quota in kilograms for management area 4-4 (LH05, LH06, LH07), 1979 - 1989.

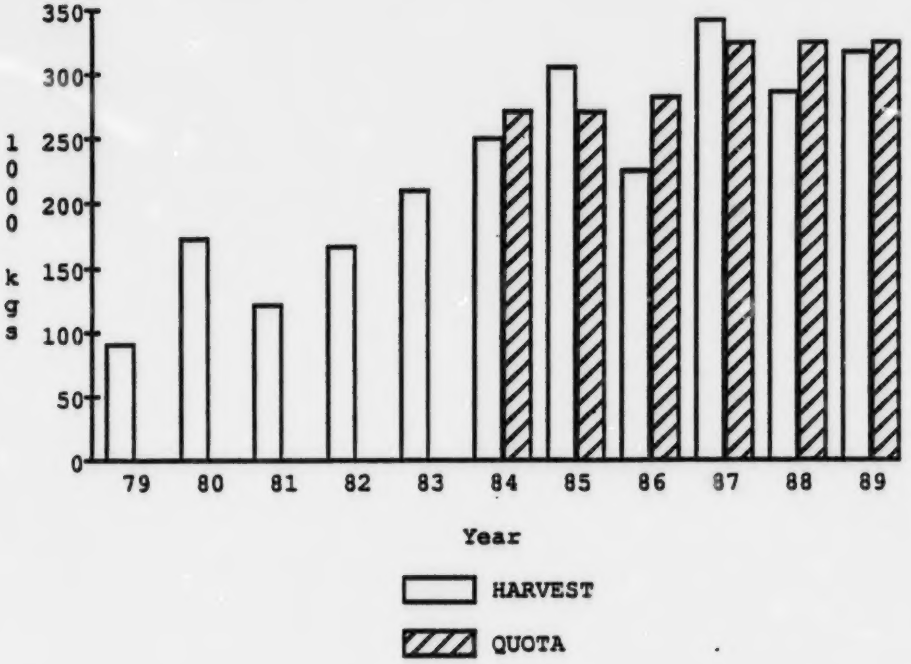


Figure 44. Lake whitefish harvest in kilograms for assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

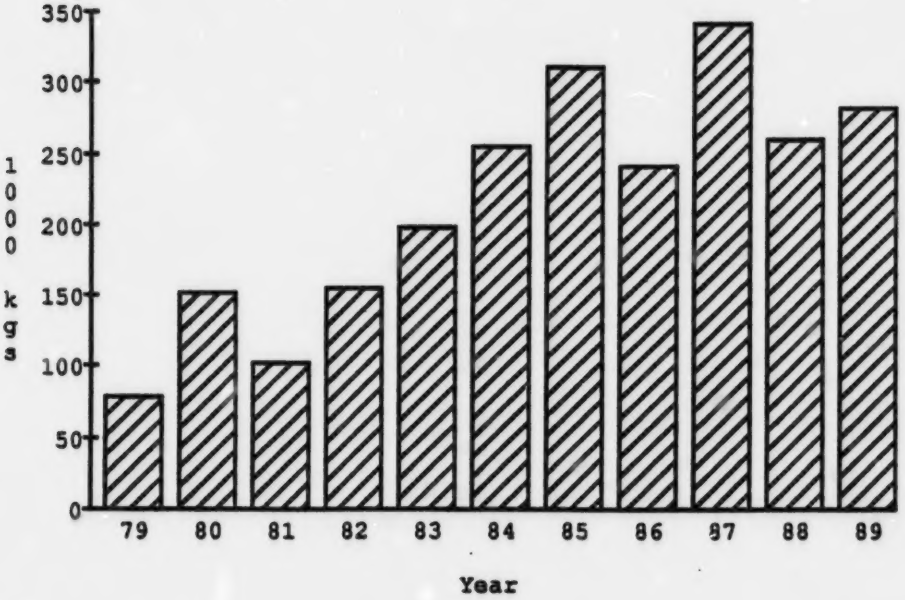


Figure 45. Lake whitefish harvest in kilograms for assessment area LH06 (subarea of management area 4-4), 1979 - 1989.

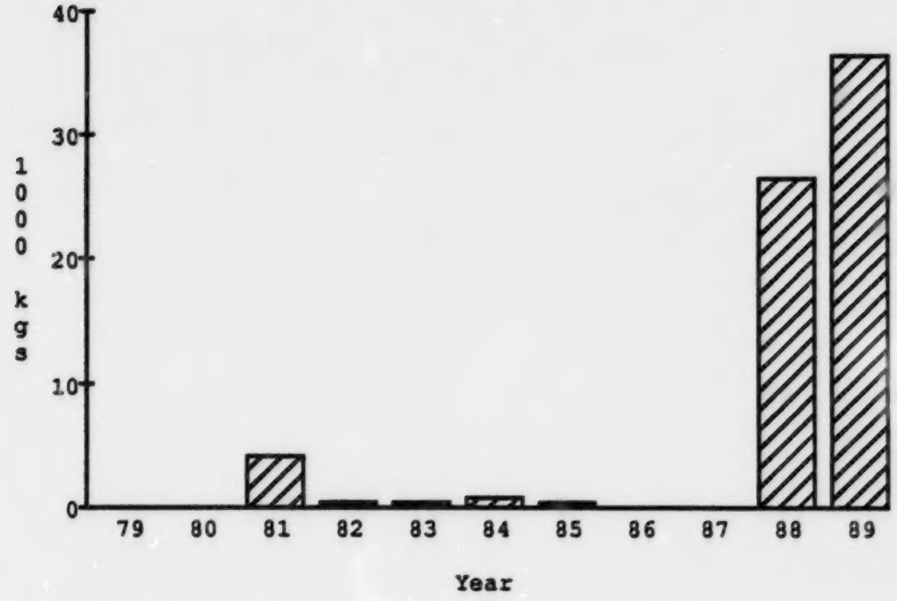


Figure 46. Annual gill net effort (km) for lake whitefish in assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

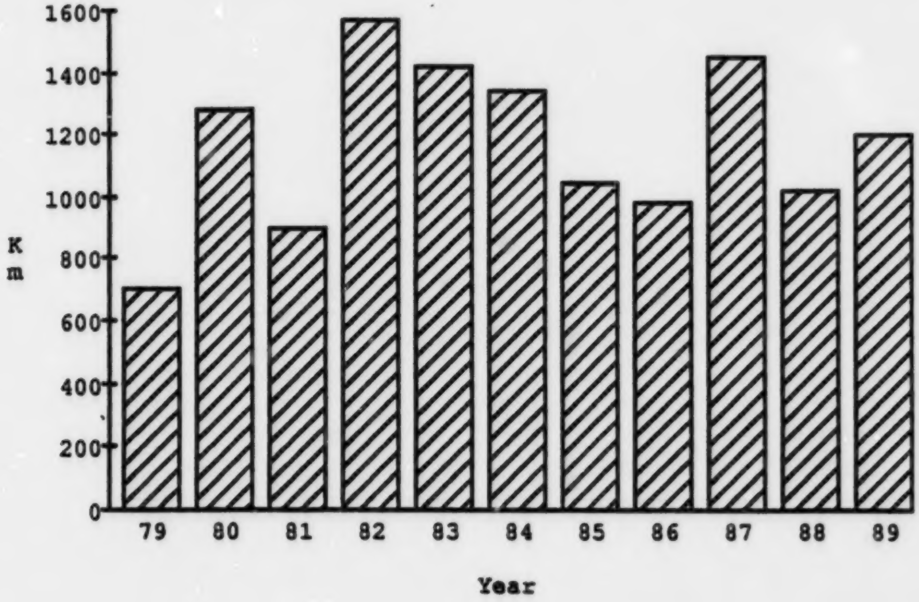


Figure 47. Annual gill net effort (km) for lake whitefish in assessment area LH06 (subarea of management area 4-4), 1979 - 1989.

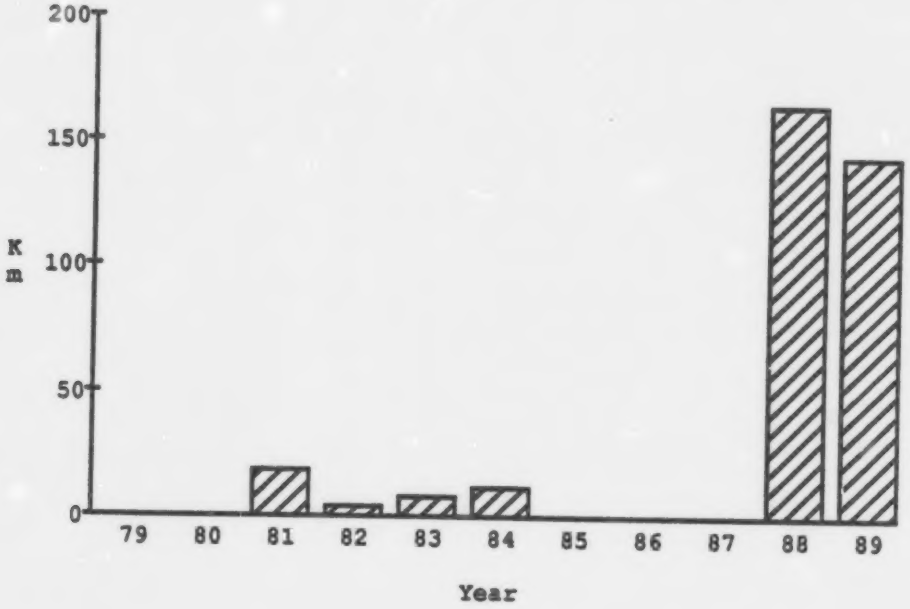


Figure 48. Lake whitefish gill net CUEs (kgs/km) for assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

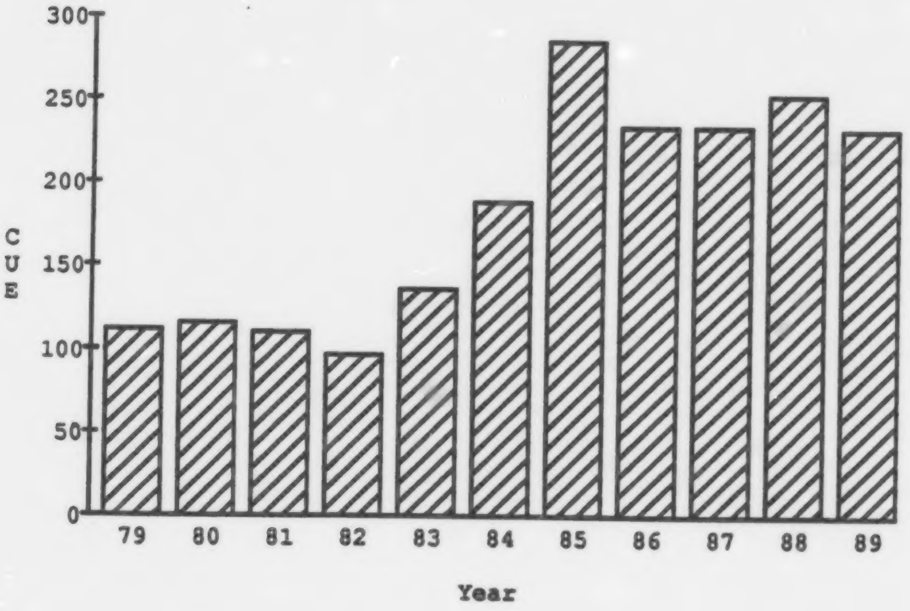


Figure 49. Lake whitefish gill net CUEs (kgs/km) for assessment area LH06 (subarea of management area 4-4), 1979 - 1989.

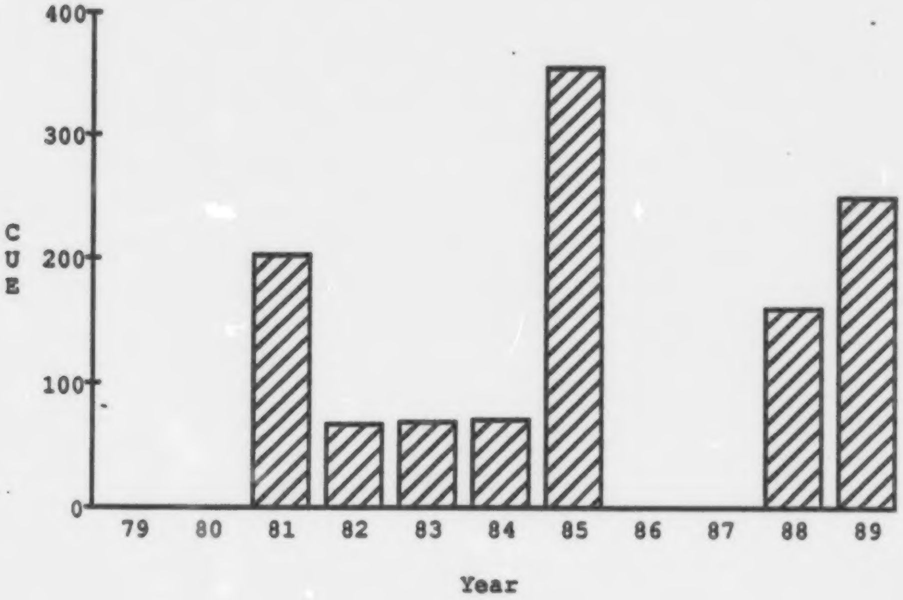


Table 16. Age-class composition of lake whitefish caught in gill nets in assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0		0	100	0	0	0	0	0	0
2	5729	1996		3365	511	0	212	0	0	0	0
3	4530	110787		72799	44881	17847	27917	6782	12432	16471	4313
4	38415	7457		34437	106749	155251	165081	93226	117690	78137	150873
5	7828	13549		23516	10738	27976	47013	70423	82364	42774	36958
6	1672	4066		1889	6218	6096	4349	10833	34697	19099	9123
7	1575	769		165	203	5236	888	2950	9769	9385	7926
8	584	687		485	0	0	1962	1281	1371	2995	1701
9	381	253		165	411	982	193	804	228	1035	2722
10	54	461		847	203	463	193	206	367	445	794
11	181	0		0	0	0	0	0	0	0	0
12	0	0		362	308	0	0	0	0	155	0
13	0	0		0	0	0	0	0	0	0	0
>13	0	0		0	0	0	0	0	0	0	0

Figure 50. Chub harvest and quota in kilograms for management area 4-4, (LH05, LH06, LH07), 1979 - 1989.

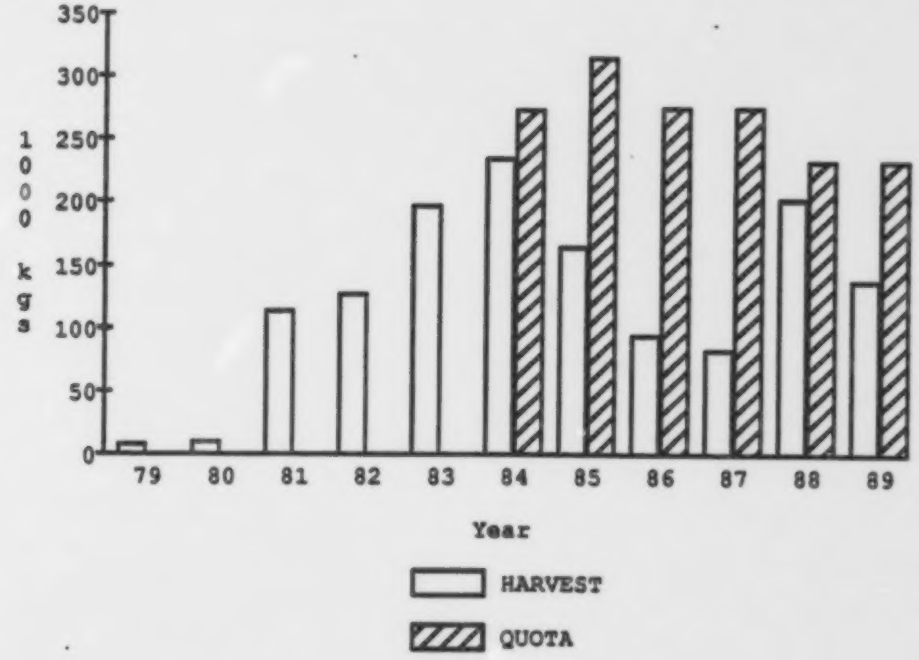


Figure 51. Chub harvest in kilograms for assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

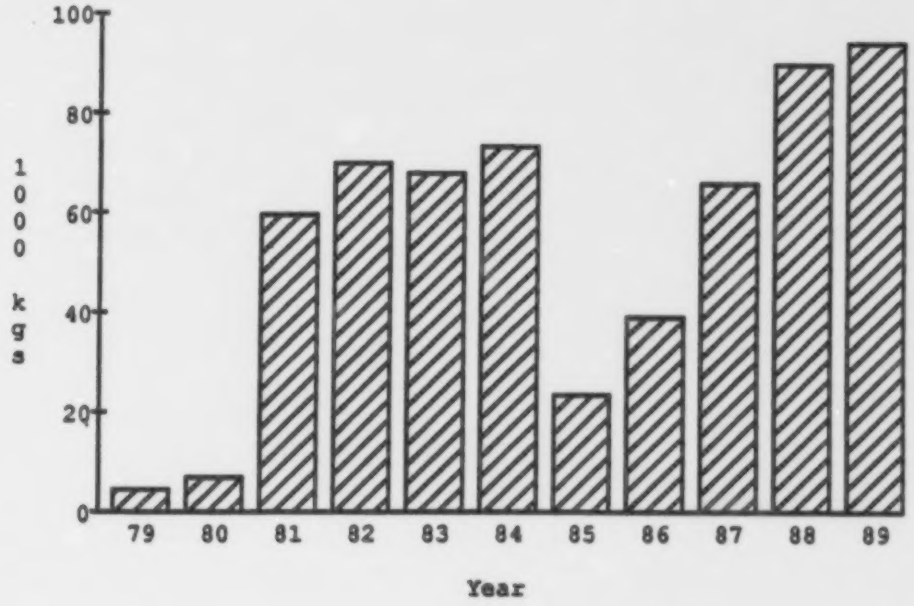


Figure 52. Chub harvest in kilograms for assessment area LH06 (subarea of management area 4-4), 1979 - 1989.

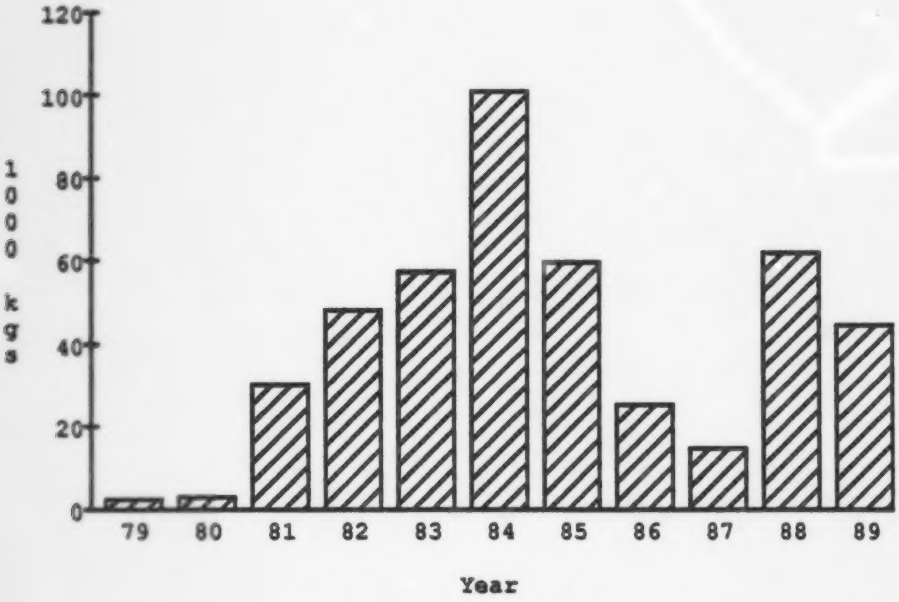


Figure 53. Chub harvest in kilograms for assessment area LH07 (subarea of management area 4-4), 1979 - 1989.

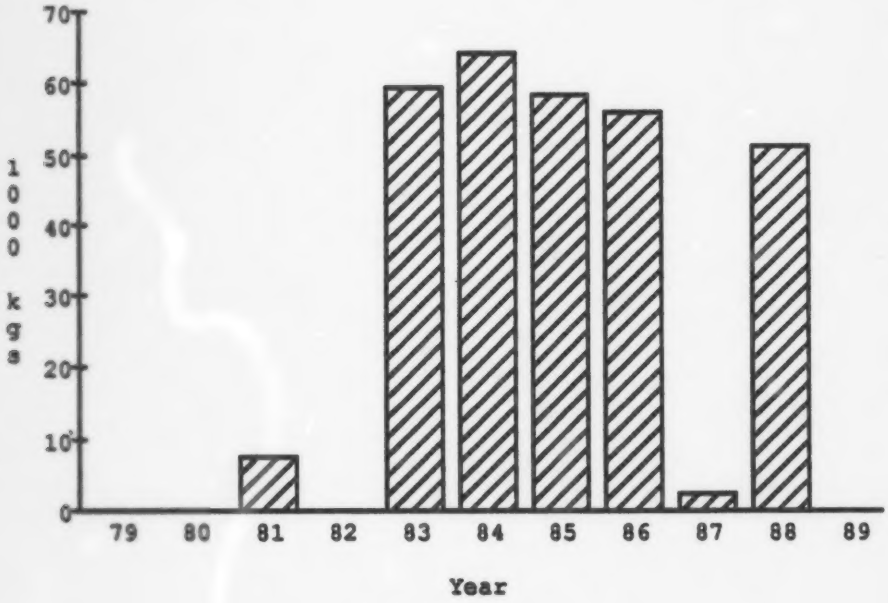


Figure 54. Annual gill net effort (km) for chub in assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

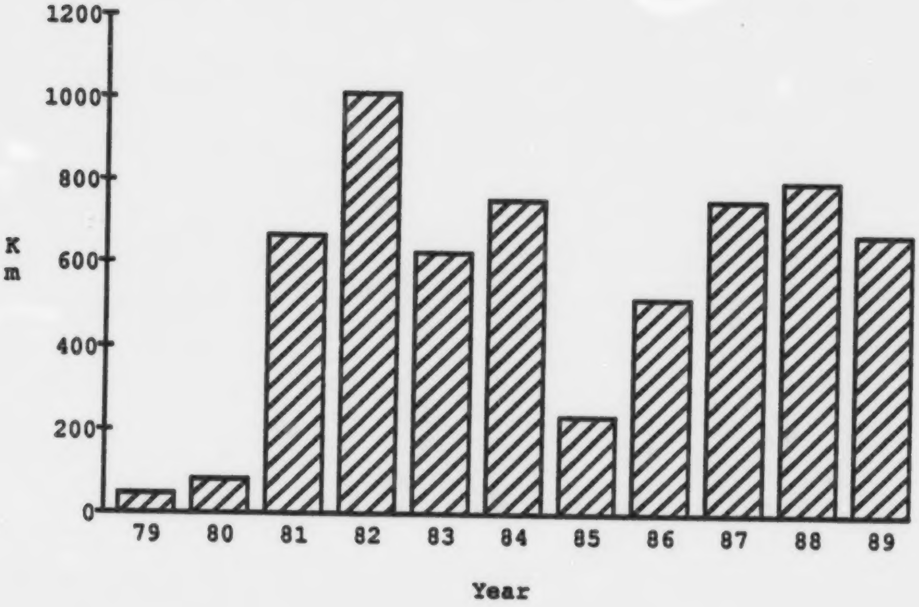


Figure 55. Annual gill net effort (km) for chub in assessment area LH06 (subarea of management area 4-4), 1979 - 1989.

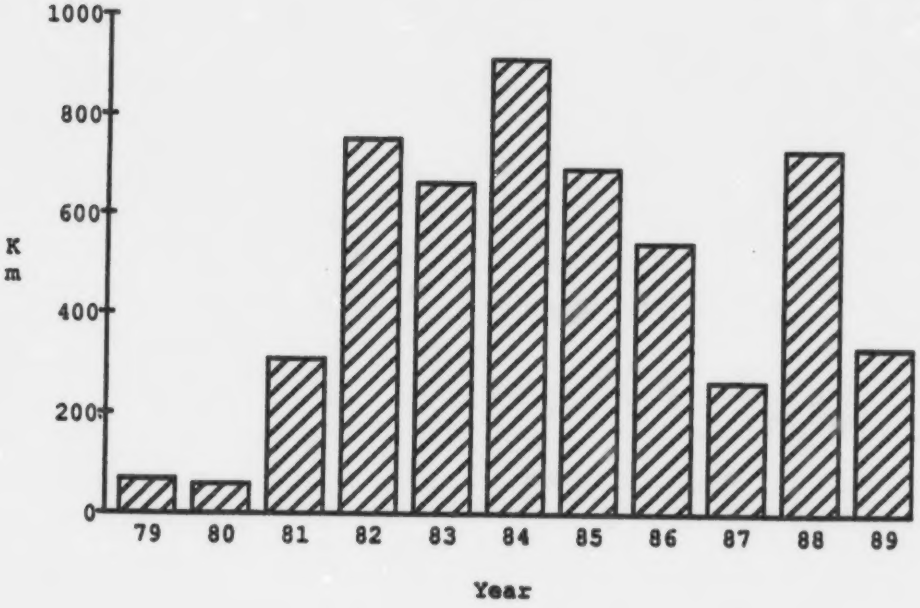


Figure 56. Annual gill net effort (km) for chub in assessment area LH07 (subarea of management area 4-4), 1979 - 1989.

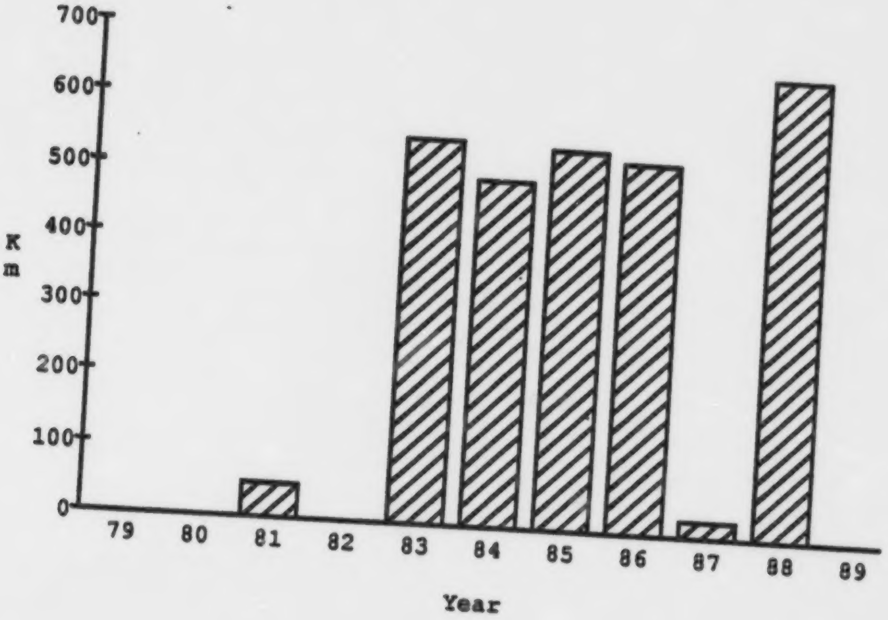


Figure 57. Chub gill net CUEs (kgs/km) for assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

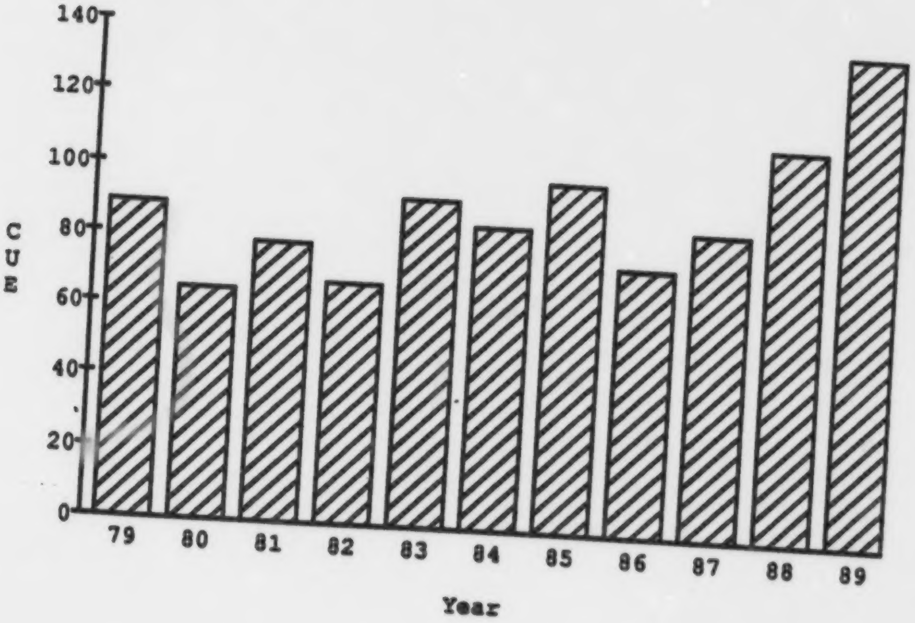


Figure 58. Chub gill net CUEs (kgs/km) for assessment area LH06 (subarea of management area 4-4), 1979 - 1989.

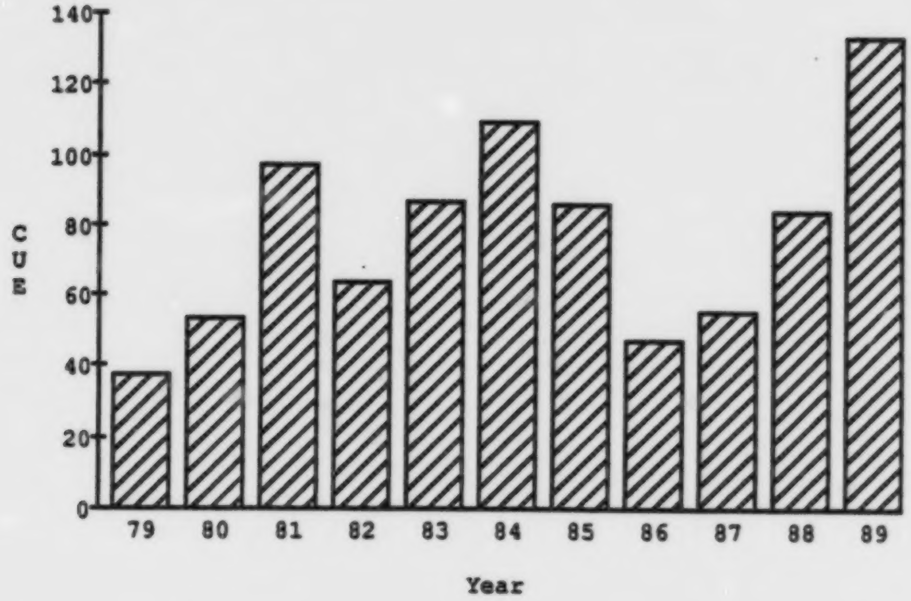


Figure 59. Chub gill net CUEs (kgs/km) for assessment area LH07 (subarea of management area 4-4), 1979 - 1989.

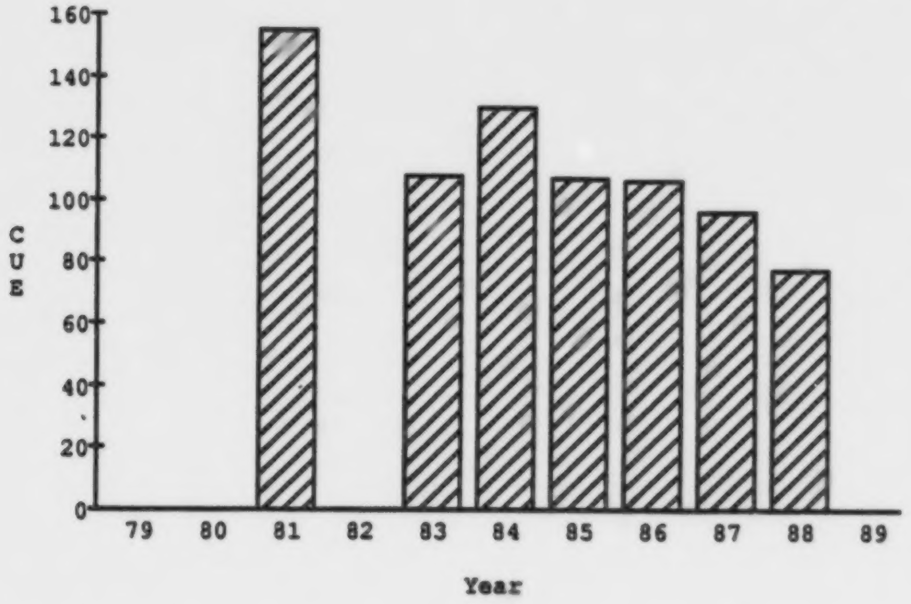


Figure 60. Chub yield (kgs/ha) for assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

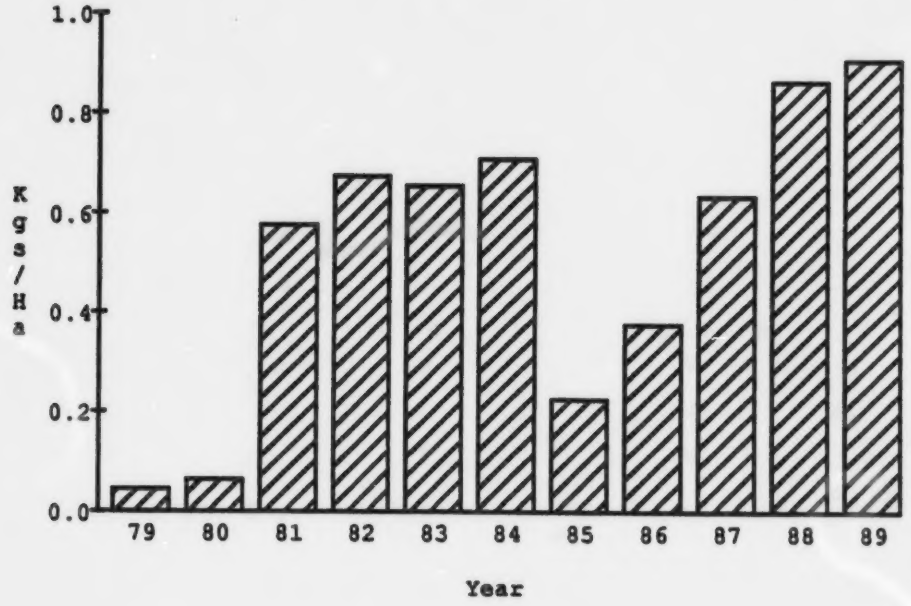


Figure 61. Chub yield (kgs/ha) for assessment area LH06 (subarea of management area 4-4), 1979 - 1989.

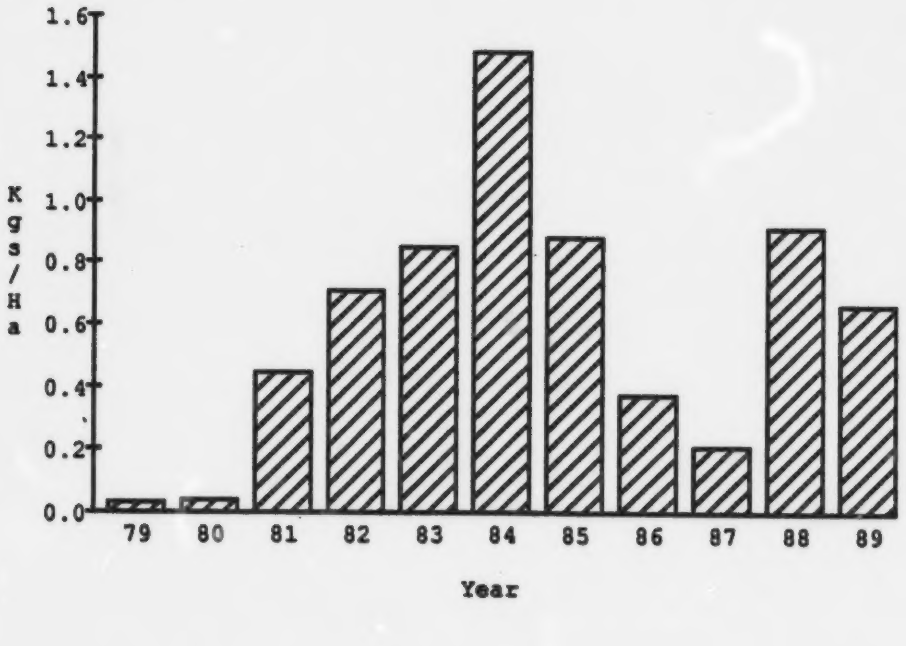


Figure 62. Chub yield (kgs/ha) for assessment area LH07 (subarea of management area 4-4), 1979 - 1989.

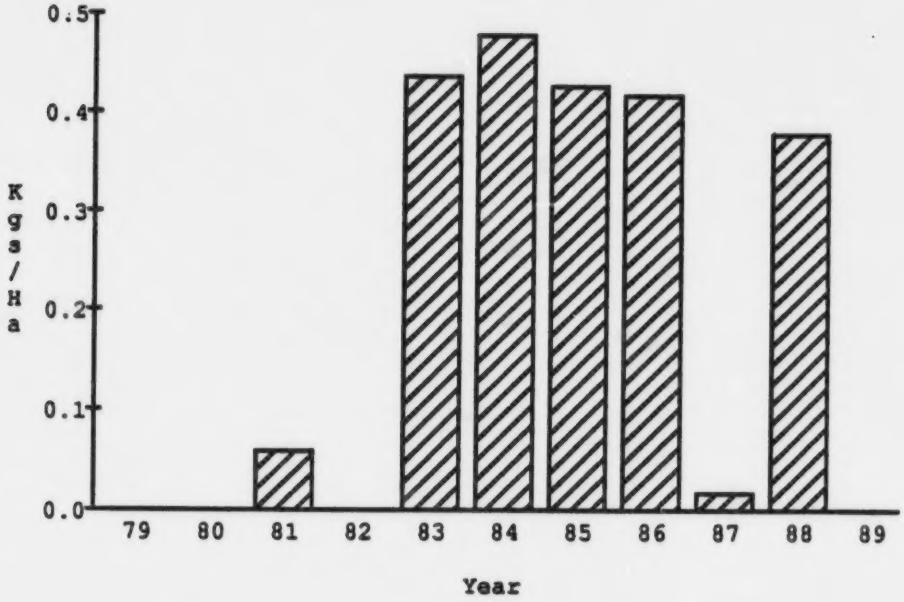


Table 17. Age-class composition of chub caught in gill nets in assessment area LH05 (subarea of management area 4-4), 1980 - 1989.

AGE	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	0	0	0	0	0
2	0	473	0	0	0	0	0	0	0	0
3	22404	34215	4779	2796	4309	8016	1443	0	0	0
4	7755	279792	86986	20480	41674	25245	25038	18361	46538	0
5	8617	18361	262116	196207	80006	35893	34221	113265	190417	104159
6	2585	473	11385	159715	143749	17229	96928	98557	172022	262965
7	1724	3286	2344	0	112698	26561	38082	100357	76207	78003
8	0	2144	0	0	4474	6700	13793	32762	14512	21952
9	0	473	0	0	1348	0	3250	6917	1963	0
10	0	473	0	0	0	0	0	1926	1250	0
11	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0
>13	0	0	0	0	0	0	0	0	0	0

Table 18. Age-class composition of chub caught in gill nets in assessment area LH06 (subarea of management area 4-4), 1983 - 1989.

AGE	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	0	0
2	756	0	0	0	0	0	0
3	12084	0	5948	1312	391	0	0
4	31441	51418	28402	30528	11282	13710	2285
5	96763	156175	119842	26664	27564	85853	49502
6	141220	177427	81161	44601	20633	153753	99488
7	8000	106401	50210	21129	7955	35908	47195
8	2989	11518	14728	7517	11590	27421	12112
9	1493	4799	1957	2199	1977	8487	5803
10	804	6719	116	0	0	0	1101
11	0	0	0	0	0	653	0
12	756	0	0	0	268	980	0
13	0	0	0	0	0	0	0
>13	0	0	0	0	0	0	0

Figure 63. Yellow perch harvest and quota in kilograms for management area 4-4 (LH05, LH06, LH07), 1979 - 1989.

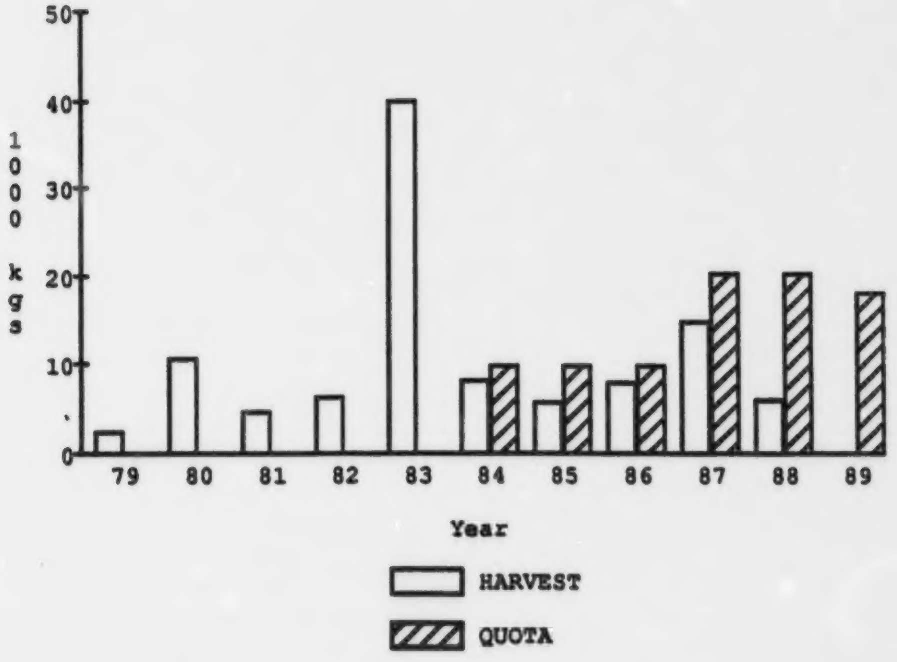


Figure 64. Yellow perch harvest in kilograms for assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

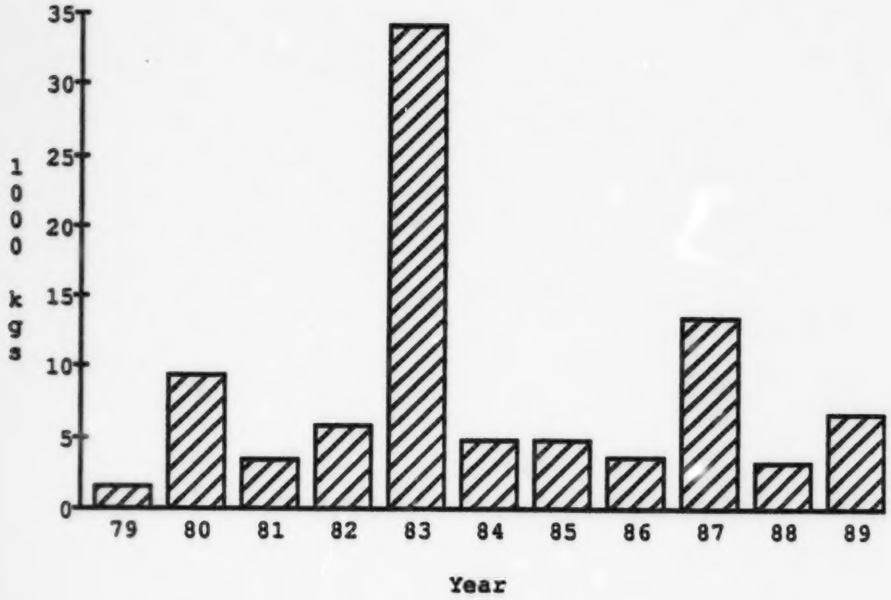


Figure 65. Yellow perch harvest in kilograms for assessment area LH06 (subarea of management area 4-4), 1979 - 1989.

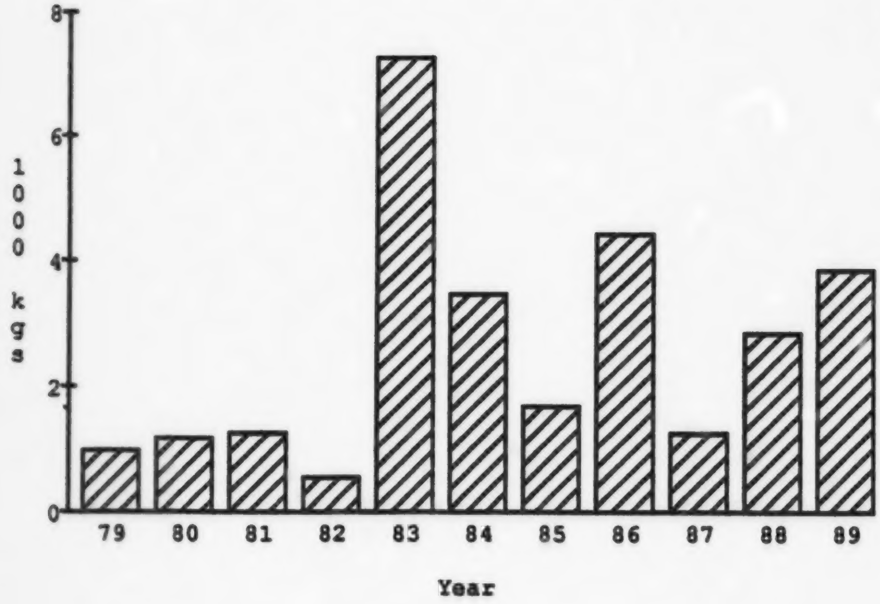


Figure 66. Annual gill net effort (km) for yellow perch in assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

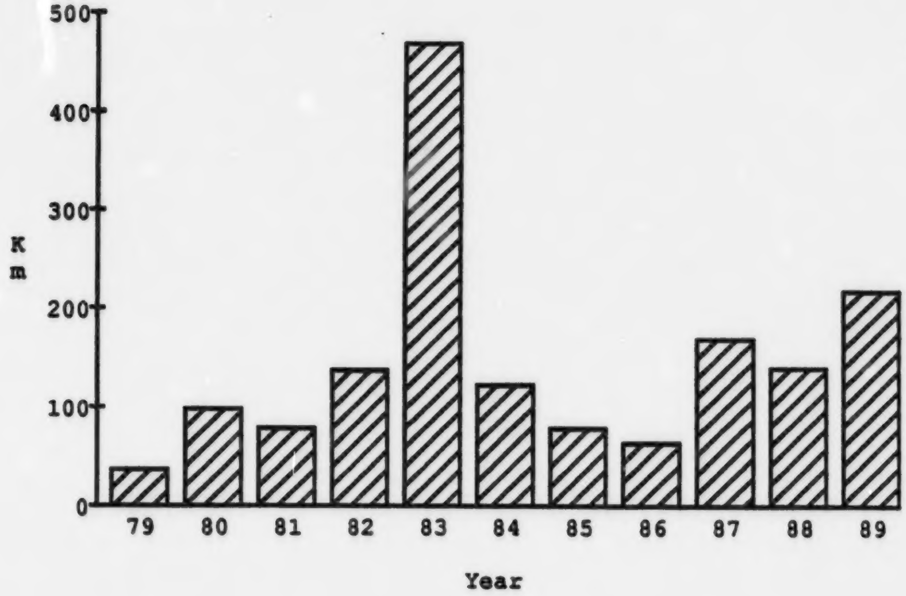


Figure 67. Annual gill net effort (km) for yellow perch in assessment area LH06 (subarea of management area 4-4), 1979 - 1989.

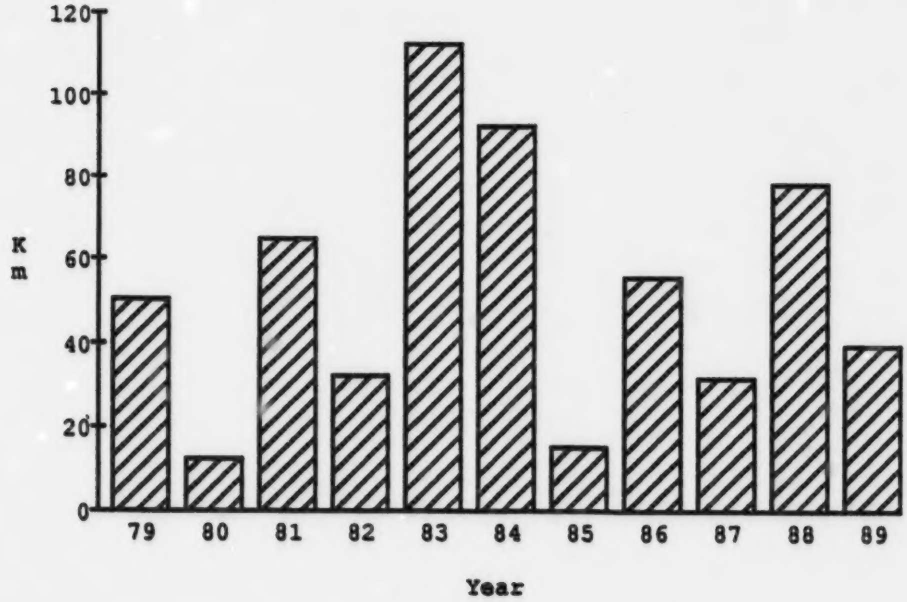


Figure 68. Yellow perch gill net CUEs (kgs/km) for assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

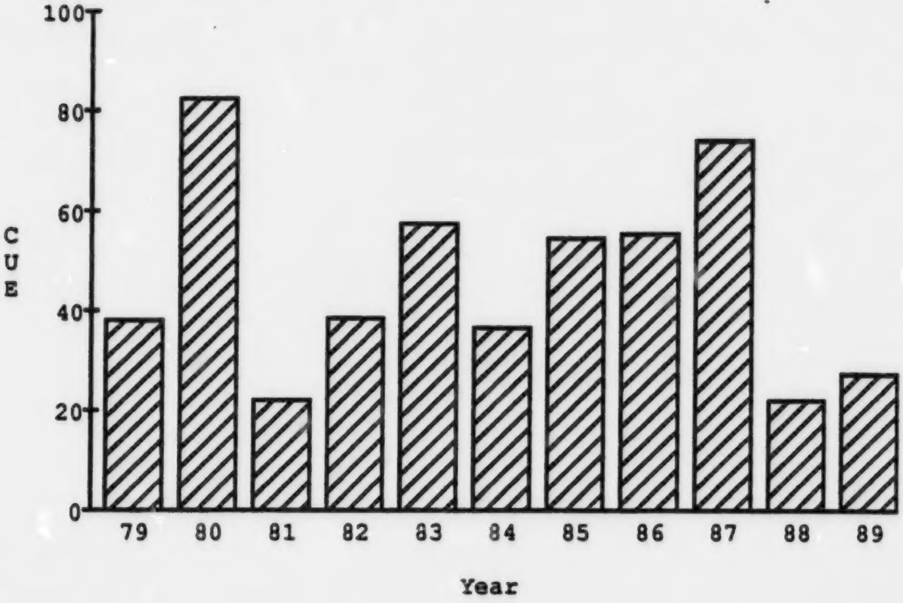


Figure 69. Yellow perch gill net CUEs (kgs/km) for assessment area LH06 (subarea of management area 4-4), 1979 - 1989.

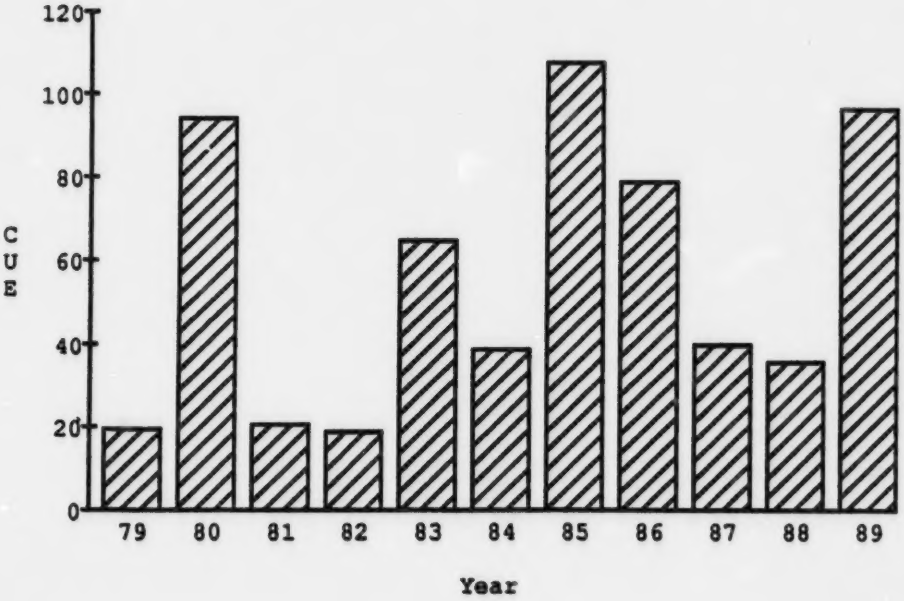
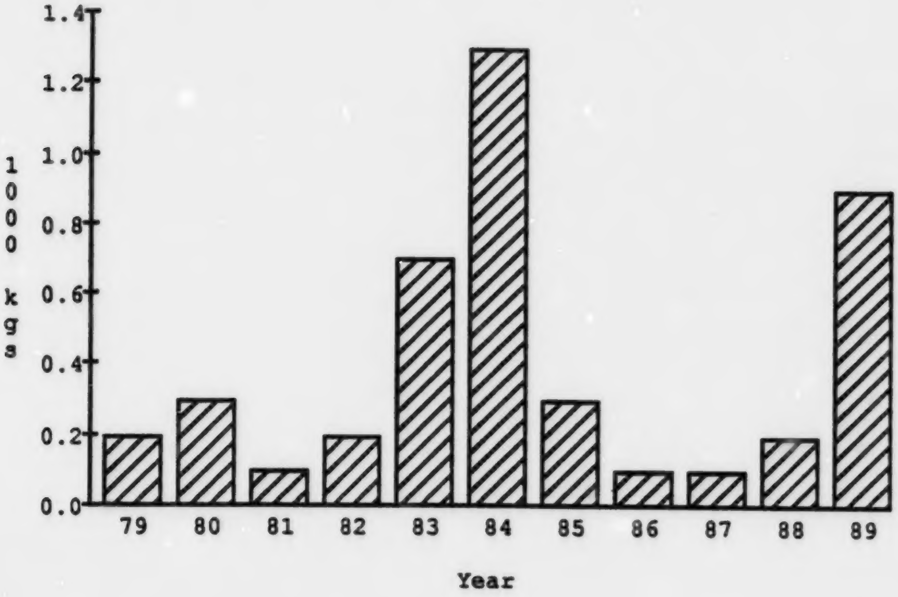


Figure 70. Lake trout/backcross harvest in kilograms for assessment area LH05 (subarea of management area 4-4), 1979 - 1989.



MANAGEMENT AREA 4-5

Lake Whitefish

- See notes for area 4-6

Chub

- Allocation remained at 41,234 kgs in 1989.
- Harvest dropped to 3,777 kgs, approximately 9% of the allocation in 1989 (Fig. 74).
- Effort dropped dramatically from 392 to 25 kms in 1989 (Fig. 75).
- CUE doubled in 1989, however, not really meaningful because of extremely low effort (Fig. 76).
- Yield plunged to 0.03 kgs/ha in 1989 (Fig. 77).
- Unable to use CUE as an indice of abundance.
- Pre-recruit data from indexing in LH08 suggests that recruitment should remain strong due to continuing entry of the 1983 and 1984 year-classes in 1990. Subsequent year-classes are much weaker so recruitment will decline in 1991.
- Abundance should be high in 1990 and may begin to decrease in 1991.

Yellow Perch

- The allocation dropped 23% to 40,919 kgs in 1989.
- The harvest rose 118% to 130,320 kgs in 1989, approximately 319% of the allocation (Fig. 78).
- Effort rose 79% to 1,823 kms in 1989 (Fig. 79).
- In recent years there has been a major shift in fishing pressure for yellow perch from 4-6 to 4-5.
- CUE increased 22% to 72 kgs/km in 1989 (Fig. 80).
- Ages 2,3 and 4 were dominant in the catch in 1989 (Table. 21). Older age-classes contributing less than in previous years.
- Abundance increased in 1989 with the recruitment of the strong 1986 and 1987 year-classes as expected.
- Pre-recruit data from indexing in LH09 and examination of commercial discards (4% of catch in 1989) suggests that recruitment should remain strong due to the continuing entry of the 1986 and 1987 year-classes in 1990 and 1991.
- Abundance should remain stable in 1990 and 1991.

Comment

- Practice of allowing fishermen to take part of their 4-6 quota in 4-5 is making it difficult to interpret data.

Table 19. Round weight (kgs) and value ($) by species for management area 4-5 (LH08), 1989.

SPECIES	HARVEST	VALUE
Pink salmon	82	360
Lake trout	271	870
Lake whitefish	17401	62688
Chub	3777	8623
Channel catfish	8	5
Burbot	90	0
White perch	2	0
White bass	10	12
Yellow perch	130320	566938
Walleye	368	1271
Freshwater drum	4	1
Discarded (mixed)	181	0

Table 20. Round weight and quota in kilograms by species for management area 4-5 (LH08), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	17401	5450	319.3
Chub	3777	41234	9.2
Yellow perch	130320	40919	318.5
Walleye	368	1156	31.8
Lake trout/backcross	271	492	55.1
Northern pike	0	0	0.0
Pink salmon	82	900	9.1
Sturgeon	0	0	0.0
Channel catfish	8	900	0.9

Figure 71. Lake whitefish harvest and quota in kilograms for management area 4-5 (LH08), 1979 - 1989.

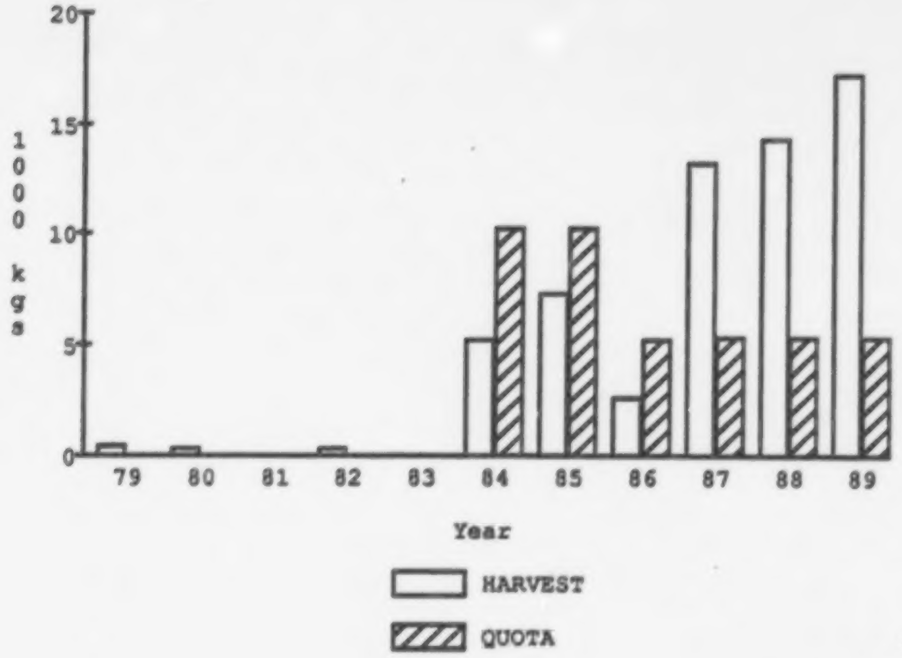


Figure 72. Annual gill net effort (km) for lake whitefish in management area 4-5 (LH08), 1979 - 1989.

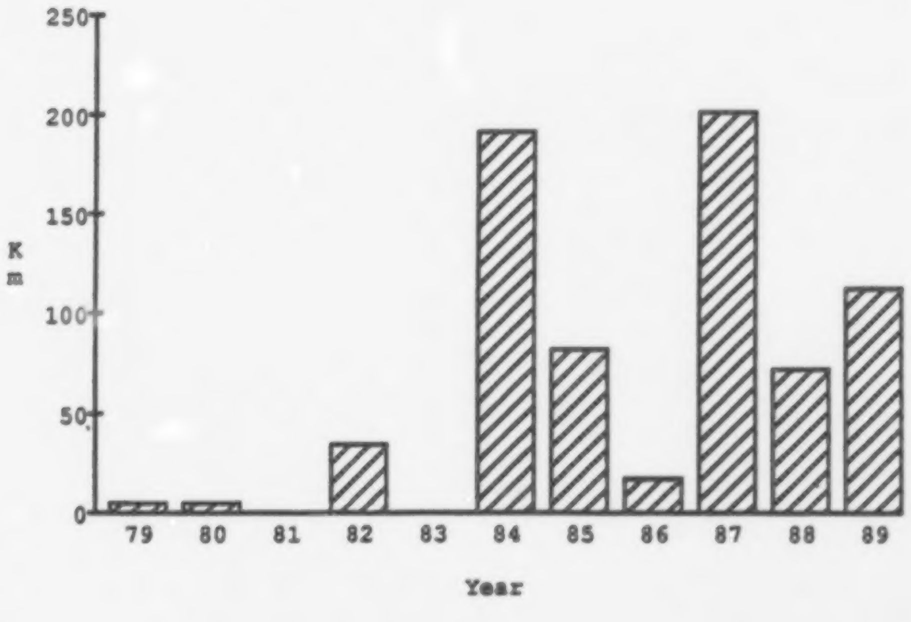


Figure 73. Lake whitefish gill net CUEs (kgs/km) for management area 4-5 (LH08), 1979 - 1989.

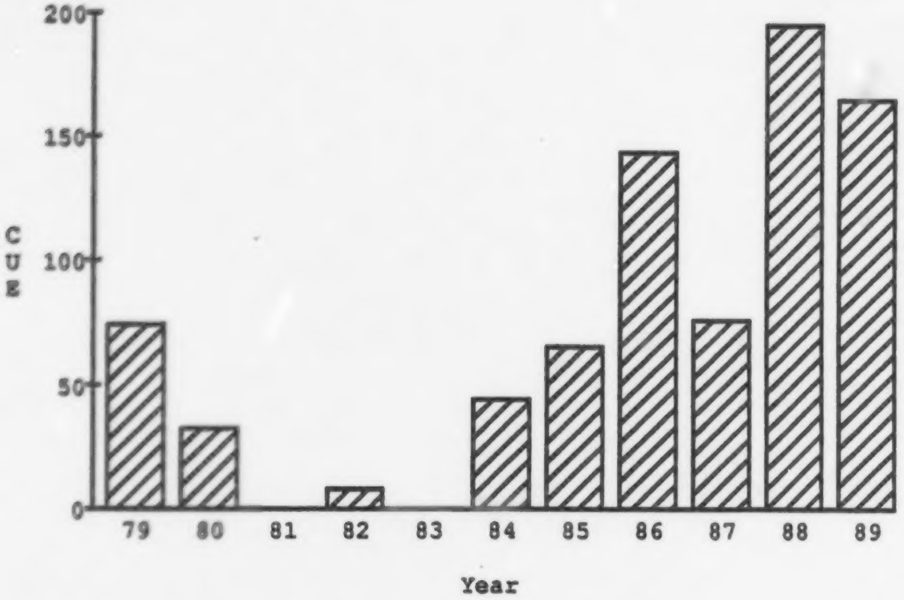


Figure 74. Chub harvest and quota in kilograms for management area 4-5 (LH08), 1979 - 1989.

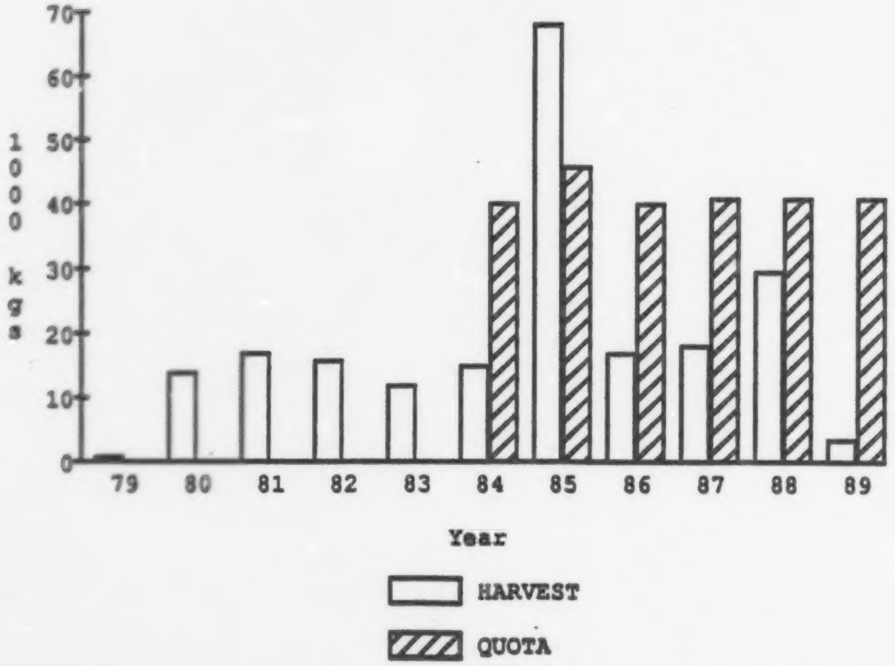


Figure 75. Annual gill net effort (km) for chub in management area 4-5 (LH08), 1979 - 1989.

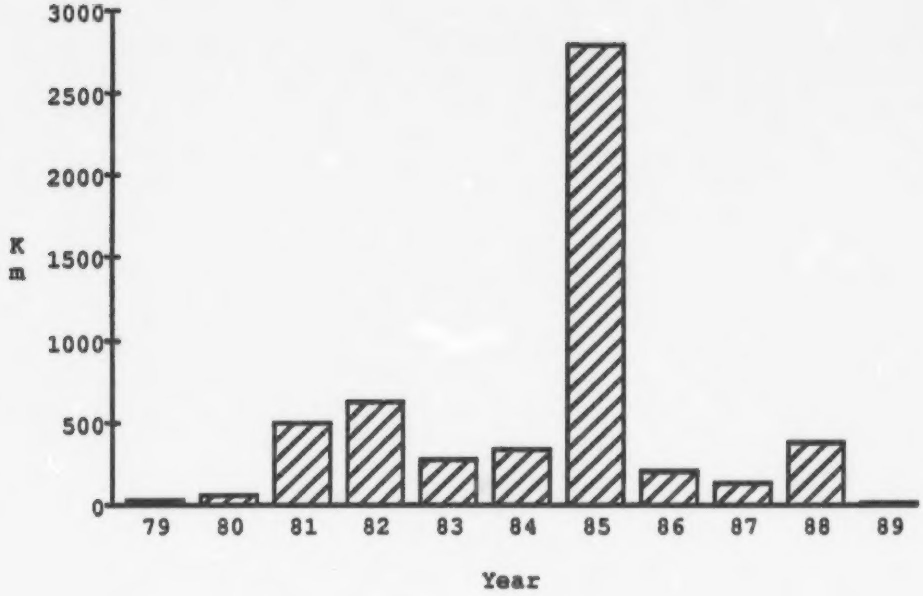


Figure 76. Chub gill net CUEs (kgs/km) for management area 4-5 (LH08), 1979 - 1989.

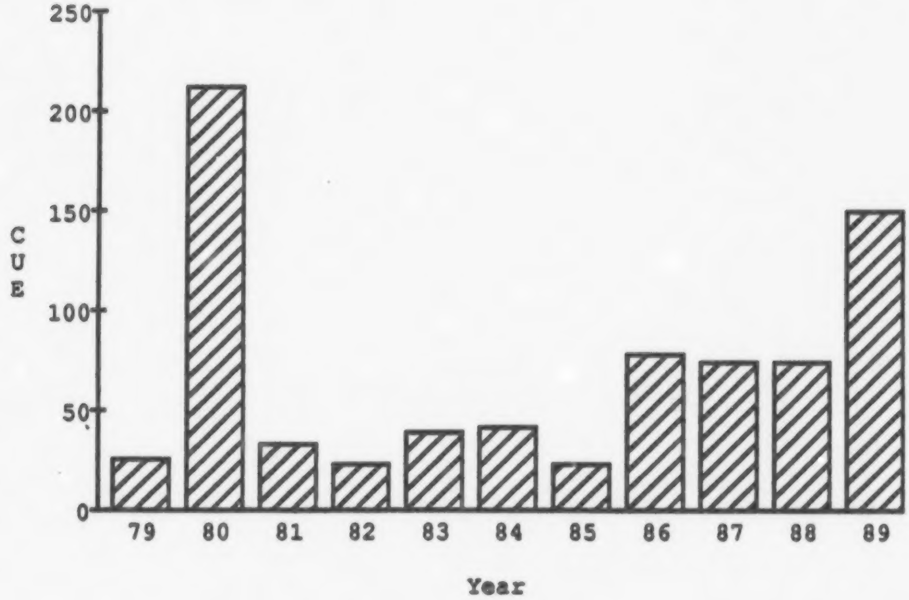


Figure 77. Chub yield (kgs/ha) for management area 4-5 (LH08), 1979 - 1989.

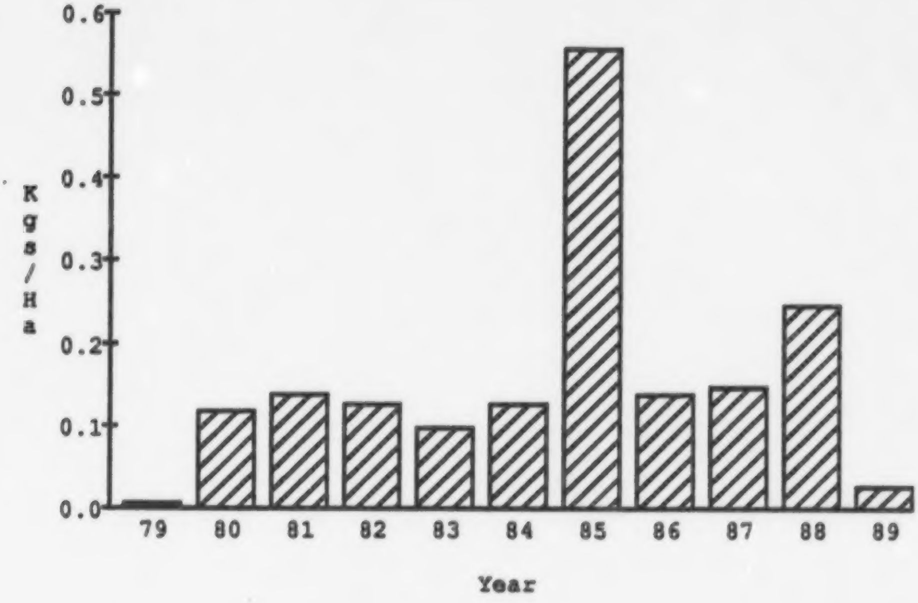


Figure 78. Yellow perch harvest and quota in kilograms for management area 4-5 (LH08), 1979 - 1989.

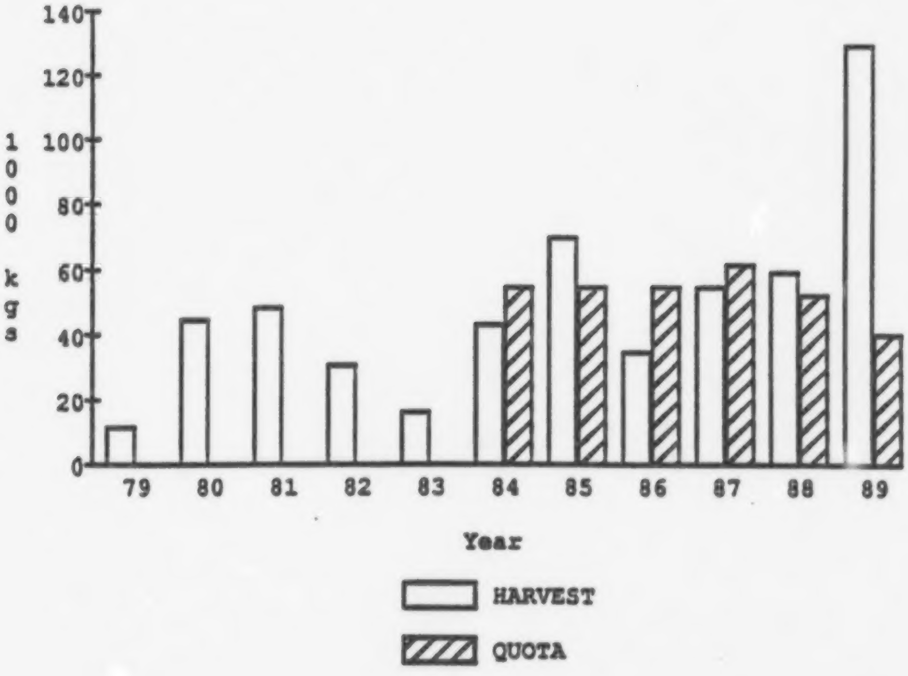


Figure 79. Annual gill net effort (km) for yellow perch in management area 4-5 (LH08), 1979 - 1989.

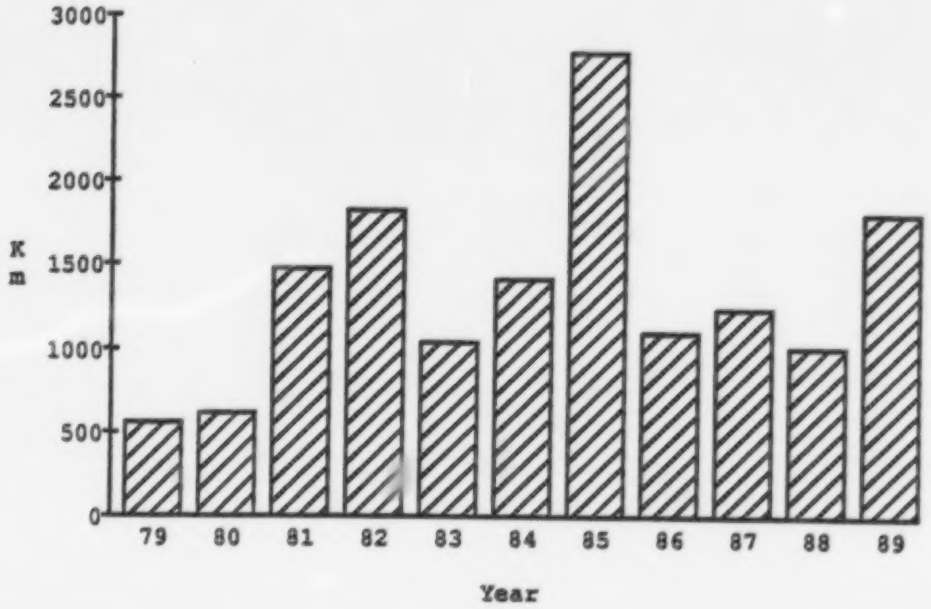


Figure 80. Yellow perch gill net CUEs (kgs/km) for management area 4-5 (LH08), 1979 - 1989.

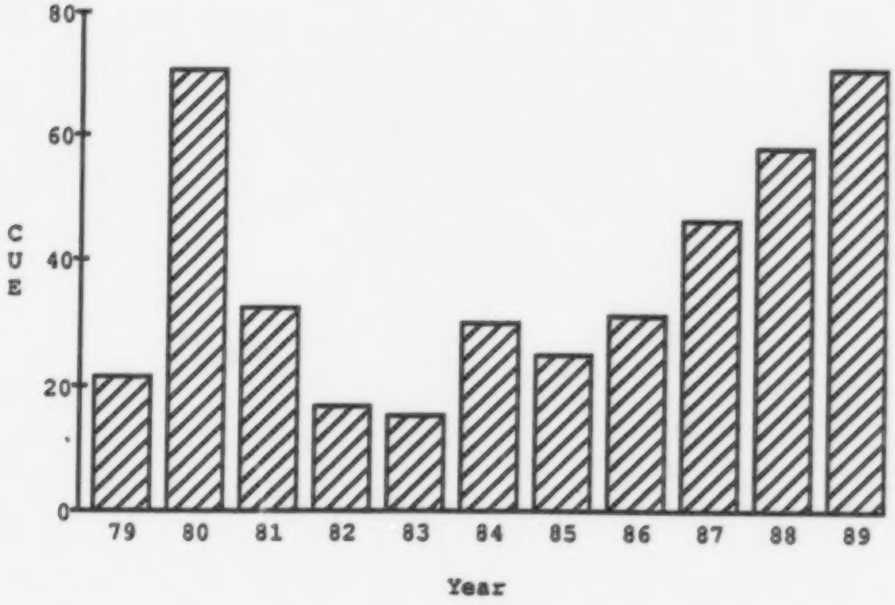


Table 21. Age-class composition of yellow perch caught in gill nets in management area 4-5 (LH08), 1987 - 1989.

AGE	1987	1988	1989
1	0	0	0
2	12460	15678	53858
3	61650	306854	950180
4	235606	136789	68914
5	115375	60968	5507
6	18687	8490	7020
7	3458	1962	2560
8	990	1270	2839
9	685	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
>13	0	0	0

MANAGEMENT AREA 4-6

Lake Whitefish

- The allocation remained virtually unchanged at 573,233 kgs in 1989.
- Virtually all of the allocation was taken in 1989 as in other recent years (Fig. 81).
- Gill net effort dropped 26% to 2,197 kms in 1989 (Fig. 82).
- Trap net effort rose 39% to 872 nets in 1989 (Fig. 83).
- Gill net CUE rose 33% to 226 kgs/km in 1989 (Fig. 84).
- Trap net CUE rose marginally to 42 kgs/net in 1989 (Fig. 85).
- Ages 3,4,5,6,7 and 8 contributed substantially to both the gill and trap net catches (Table 24, 25). Interestingly, the extremely strong 1982 year-class is still making a significant contribution to the catch.
- As expected, abundance increased in 1989 as the strong 1986 year-class continued to recruit to the fishery.
- Pre-recruit data from indexing in LH09 and examination of releases from the commercial trap net fishery suggest that recruitment should stay strong in 1990 with the continuing entry of the 1986 and 1987 year-classes. Recruitment should increase in 1991 as the strong 1988 year-class begins to enter the fishery in large numbers.
- Abundance should stay at the 1989 level in 1990 and then possibly increase in 1991.

Chub

- Allocation rose 9% to 128,057 kgs in 1989.
- Harvest dropped to 14,933 kgs, approximately 12% of the allocation in 1989 (Fig. 86).
- Effort dropped dramatically from 994 to 144 kms in 1989 (Fig. 87).
- CUE rose 57% to 99 kgs/km in 1989 (Fig. 88).
- Yield plunged to 0.30 kgs/ha in 1989 (Fig. 89).
- Ages 6 and 7 were the mainstay of the retained catch in 1989 (Table 26). Although the extremely poor showing of age 4 fish was expected the weak contribution of age 5 fish was not. However, examination of commercial discards (8% of the catch in 1989) indicates that the 1984 year-class (age 5) was being caught in the numbers expected.
- Abundance rose in 1989 as predicted.
- Pre-recruit data from indexing in LH08 suggests that recruitment should remain strong due to continuing entry of the 1983 and 1984 year-classes in 1990. Subsequent year-classes are much weaker so recruitment will decline in 1991.
- Abundance should be high in 1990 and may begin to decrease in 1991.

Yellow perch

- The allocation rose 9% to 238,915 kgs in 1989.
- The harvest remained virtually unchanged at 101,098 kgs in 1989, approximately 42% of the allocation (Fig. 90). Nearly 92% of the harvest came out of gill nets.
- Gill net effort dropped 12% to 1,686 kms in 1989 (Fig. 91).
- Gill net CUE rose 33% to 226 kgs/km in 1989 (Fig. 93).
- Ages 2,3,4, and contributed substantially to the gill catch (Table 27) while ages 3,4 and 5 constituted the bulk of the trap net catch (Table 28).
- As expected, abundance increased in 1989 as the strong 1986

year-class continued to recruit to the fishery.

- Pre-recruit data from indexing in LH09 and examination of commercial discards (8% of catch in 1989) indicates that recruitment should stay stable in 1990 and 1991 as the 1986 and 1987 year-classes continue to enter the fishery.
- Abundance should stay at the 1989 level in 1990 and 1991.

Walleye

- The allocation remained unchanged at 136,754 kgs in 1989.
- The walleye harvest fell 20% in 1989 to 110,646 kg, approximately 81% of the allocation (Fig. 95). The trap net fishery accounted for 93% of the 1989 harvest (Fig. 97).
- Trap net effort rose 13% to to 2,032 nets in 1989 (Fig. 99).
- Trap net CUE dropped 28% to 50 kgs/net, returning to the 1985-87 level (Fig. 101).
- Age 3,4 and 5 fish were, as predicted, well represented in the 1989 catch (Table 29).
- Recruitment is expected to drop in 1990 and 1991 as the weaker 1987 and 1986 year-classes enter the fishery.
- Age 4, 5 and 6 fish will likely constitute the bulk of the catch in 1990.
- Abundance will decrease in 1990 and likely 1991 as well.

Comment

- Practice of allowing fishermen to take part of their 4-5 quota in 4-6 is making it difficult to interpret data.

Table 22. Round weight (kgs) and value ($) by species for management area 4-6 (LH09), 1989.

SPECIES	HARVEST	VALUE
Lake sturgeon	3215	19993
Caviar	77	9492
Gizzard shad	149	70
Pink salmon	11	18
Lake trout	14868	40932
Lake whitefish	535975	1754127
Lake herring	22	24
Round whitefish	333	652
Chub	14933	33854
Rainbow smelt	30	64
Northern pike	5	11
Suckers	5107	2094
Carp	3801	1972
Channel catfish	32498	42802
Burbot	1077	1425
White perch	2296	3154
White bass	5503	8350
Rock bass	102	147
Yellow perch	109247	473020
Walleye	110655	573316
Freshwater drum	23246	15143
Discarded (mixed)	181	0

Table 23. Round weight and quota in kilograms by species for management area 4-6 (LH09), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	535975	573233	93.5
Chub	14933	128057	11.7
Yellow perch	109247	238915	45.7
Walleye	110646	136754	80.9
Lake trout/backcross	14869	33570	44.3
Northern pike	5	228	2.2
Pink salmon	11	2220	0.5
Sturgeon	3215	3589	89.6
Channel catfish	32498	45684	71.1

Figure 81. Lake whitefish harvest and quota in kilograms for management area 4-6 (LH09), 1979 - 1989.

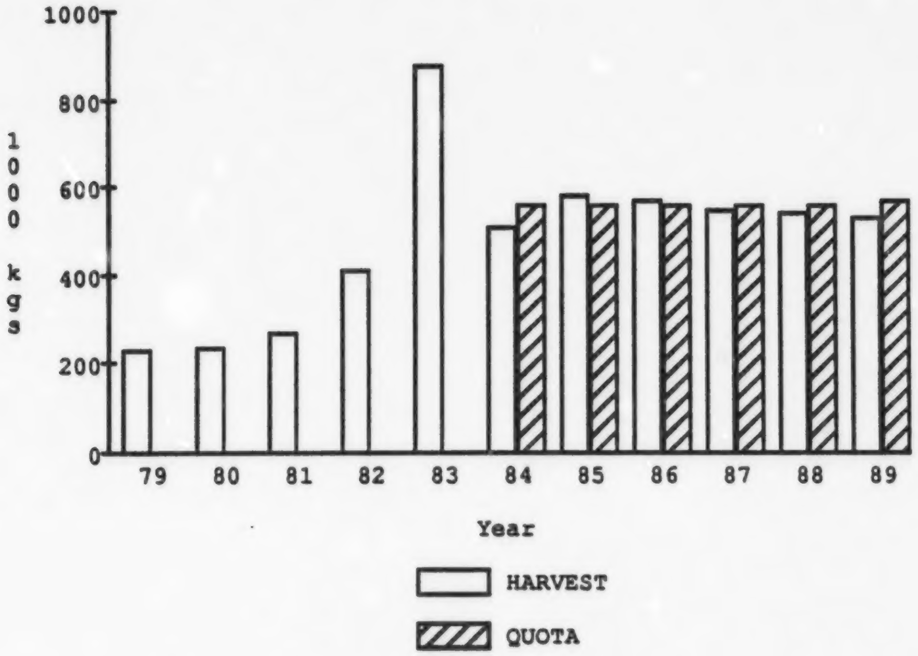


Figure 82. Annual gill net effort (km) for lake whitefish in management area 4-6 (LH09), 1979 - 1989.

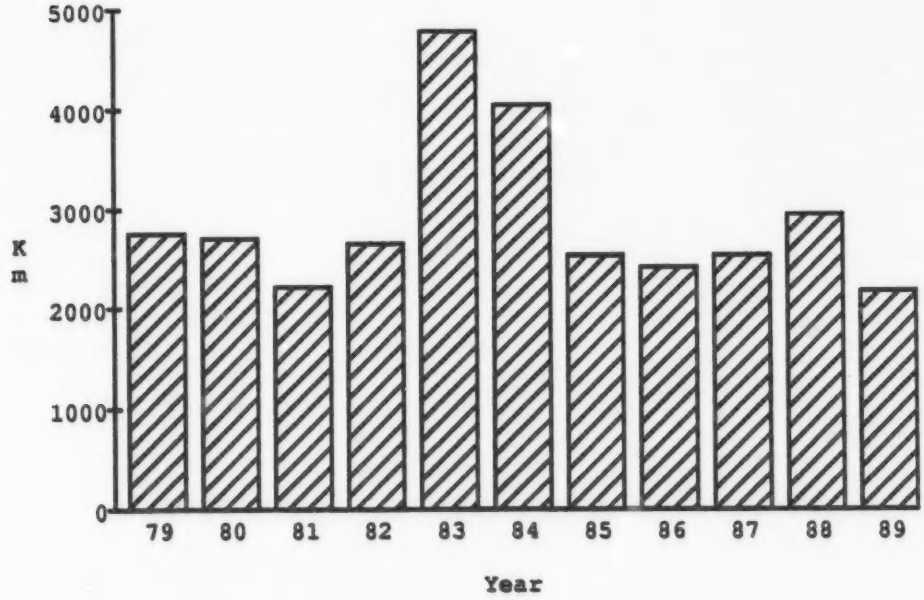


Figure 83. Annual trap net effort (# of nets) for lake whitefish in management area 4-6 (LH09), 1979 - 1989.

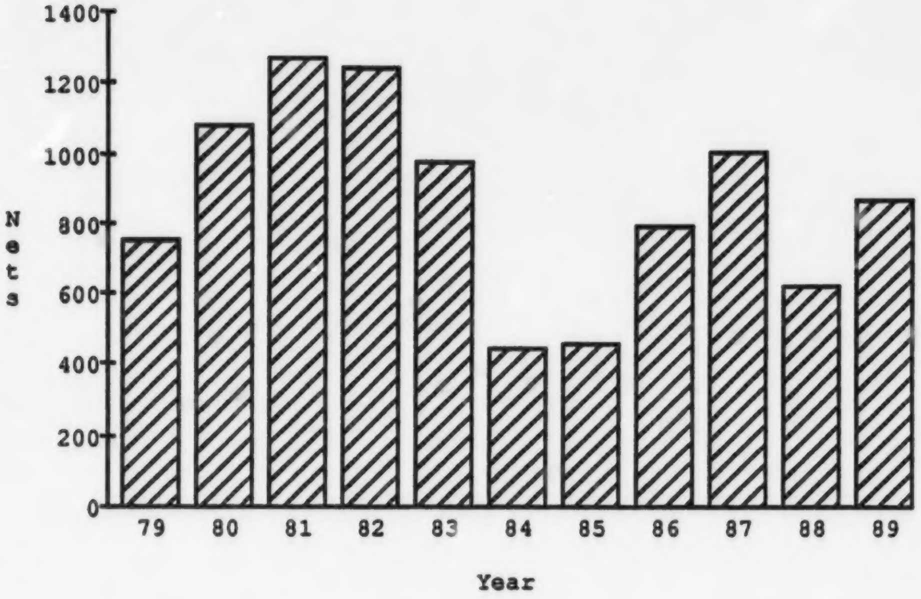


Figure 84. Lake whitefish gill net CUEs (kgs/km) for management area 4-6 (LH09), 1979 - 1989.

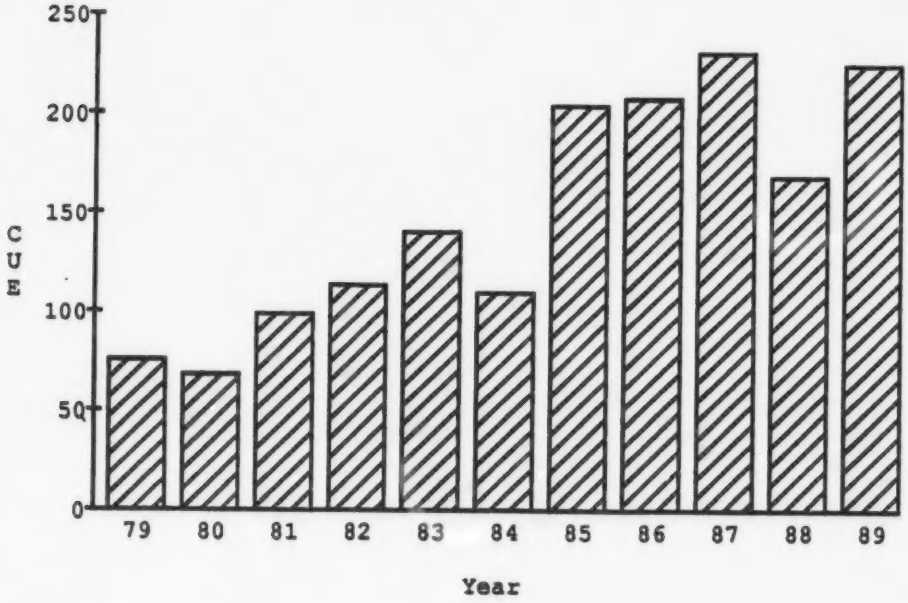


Figure 85. Lake whitefish trap net CUEs (kgs/net) for management area 4-6 (LH09), 1979 - 1989.

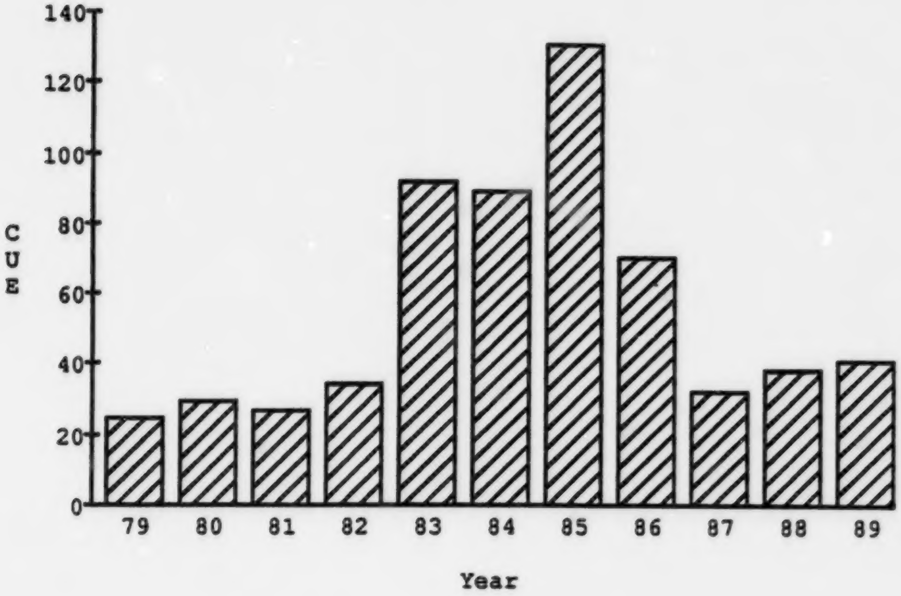


Table 24. Age-class composition of lake whitefish caught in gill nets in management area 4-6 (LH09), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	0	0	0	0	0	79
2	50588	86383	137116	170749	51302	114997	766	5164	14116	39764	6153
3	54004	91811	101226	126260	603198	216827	343686	93129	51186	90035	140064
4	57063	9264	10154	20680	30537	79174	53656	230195	63599	51474	52765
5	12386	2824	1325	1756	5785	5092	31994	20297	180544	45009	31492
6	1489	48	993	226	1751	1850	6767	6702	32326	88204	27242
7	104	183	551	765	1446	342	1247	1163	15965	15661	60129
8	0	0	0	226	305	478	2339	1307	4459	10677	13217
9	104	0	0	0	0	0	80	319	3191	3434	6917
10	104	803	0	0	0	0	0	160	84	1208	2492
11	0	0	0	226	0	0	160	0	745	76	527
12	0	0	0	0	0	0	80	0	42	300	0
13	0	0	0	0	0	0	0	0	0	145	215
>13	0	0	0	0	0	0	0	0	0	0	215

Table 25. Age-class composition of lake whitefish caught in trap nets in management area 4-6 (LH09), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	0	0	0	0	0	0
2	289	0	0	5116	331	471	0	0	0	0	0
3	4418	24322	32599	19085	84113	23765	61848	3603	3824	10107	19332
4	7668	0	3622	4498	6069	11582	6486	36517	4894	2853	2180
5	2065	0	0	3502	431	1638	585	1618	10367	1398	1090
6	0	3475	0	69	39	378	21	2513	1640	3319	975
7	0	0	0	646	0	252	0	222	885	504	3500
8	0	0	0	0	627	0	8	0	383	317	458
9	0	0	0	215	0	0	0	0	0	112	1032
10	0	0	0	215	0	0	0	0	0	0	115
11	0	0	0	0	0	0	0	0	0	38	0
12	0	0	0	0	0	0	0	0	40	0	0
13	0	0	0	0	0	0	0	0	0	0	0
>13	0	0	0	0	0	0	0	170	0	0	0

Figure 86. Chub harvest and quota in kilograms for management area 4-6 (LH09), 1979 - 1989.

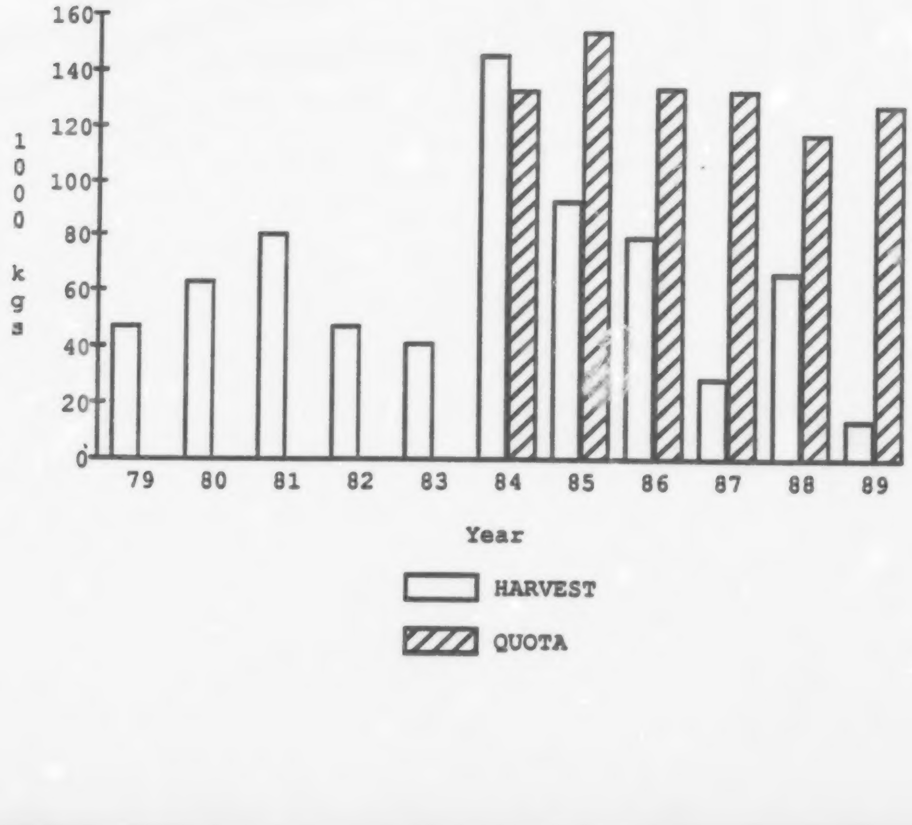


Figure 87. Annual gill net effort (km) for chub in management area 4-6 (LH09), 1979 - 1989.

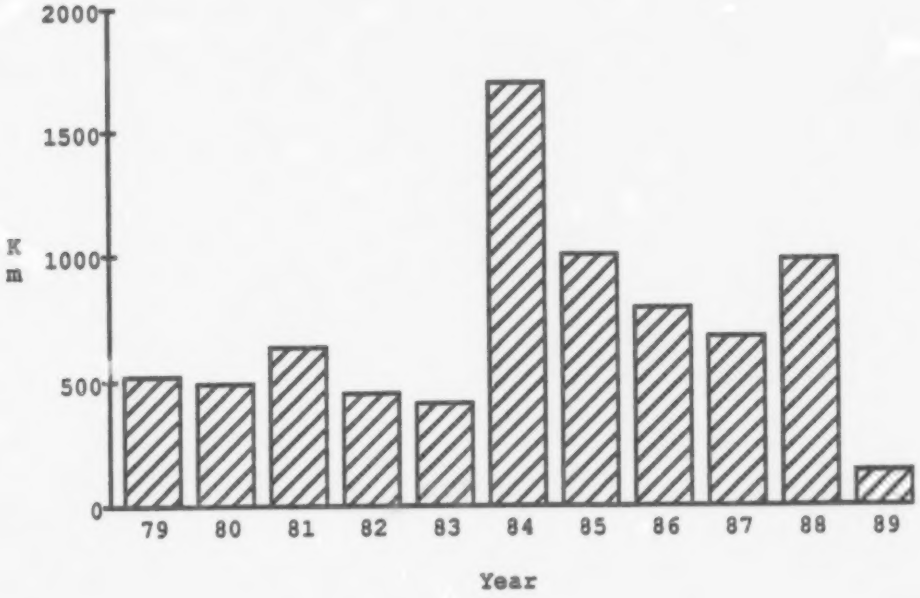


Figure 88. Chub gill net CUEs (kgs/km) for management area 4-6 (LH09), 1979 - 1989.

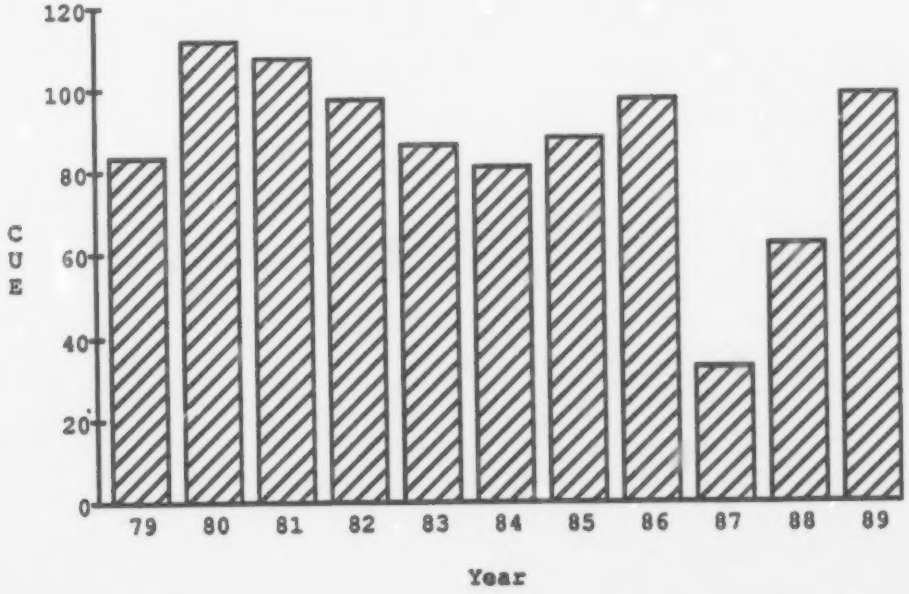


Figure 89. Chub yield (kgs/ha) for management area 4-6 (LH09), 1979 - 1989.

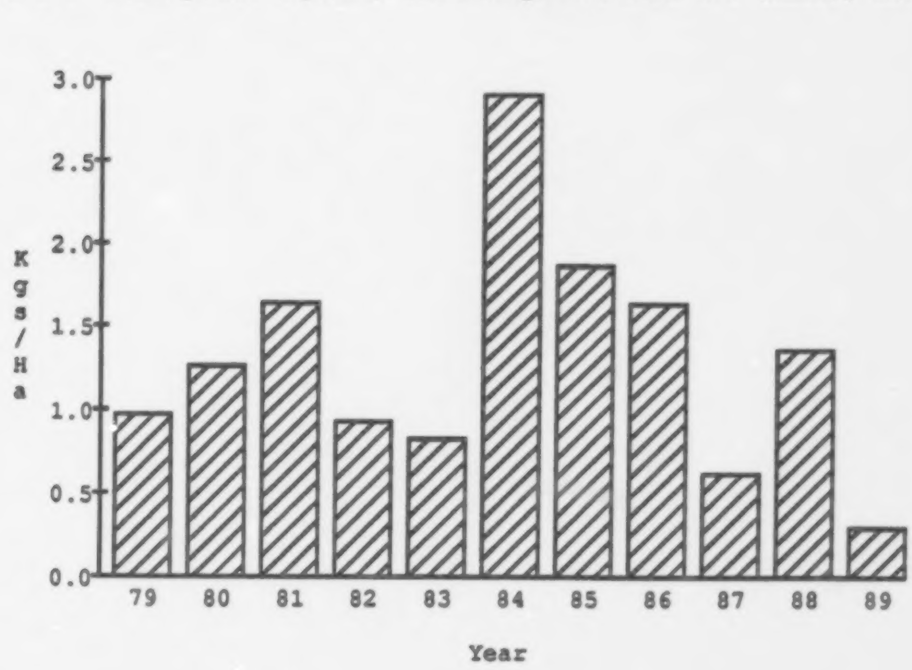


Table 26. Age-class composition of chub caught in gill nets in management area 4-6 (LH09), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0		0	0	0	0	0	0	0
2	3346	0	0		0	0	528	0	0	0	0
3	6853	143940	13560		4413	12640	14469	2254	301	804	0
4	50045	21498	280881		20577	80072	21151	42132	4823	19971	533
5	31182	22719	31453		79923	166264	152051	166032	29488	86925	5582
6	27013	15951	30934		90986	251032	126431	142490	48204	169766	26982
7	32409	20188	6521		2553	240253	102310	49233	34304	78547	26100
8	7988	24261	8597		1471	13855	44758	19477	16245	24627	7877
9	2697	6569	5483		1471	0	352	1759	5253	4754	2918
10	0	5897	519		0	0	0	227	430	1259	351
11	266	3246	0		0	0	0	0	581	804	0
12	0	0	0		0	0	0	0	78	483	251
13	266	666	0		0	0	0	0	0	0	0
>13	0	0	0		0	0	0	0	0	0	0

Figure 90. Yellow perch harvest and quota in kilograms for management area 4-6 (LH09), 1979 - 1989.

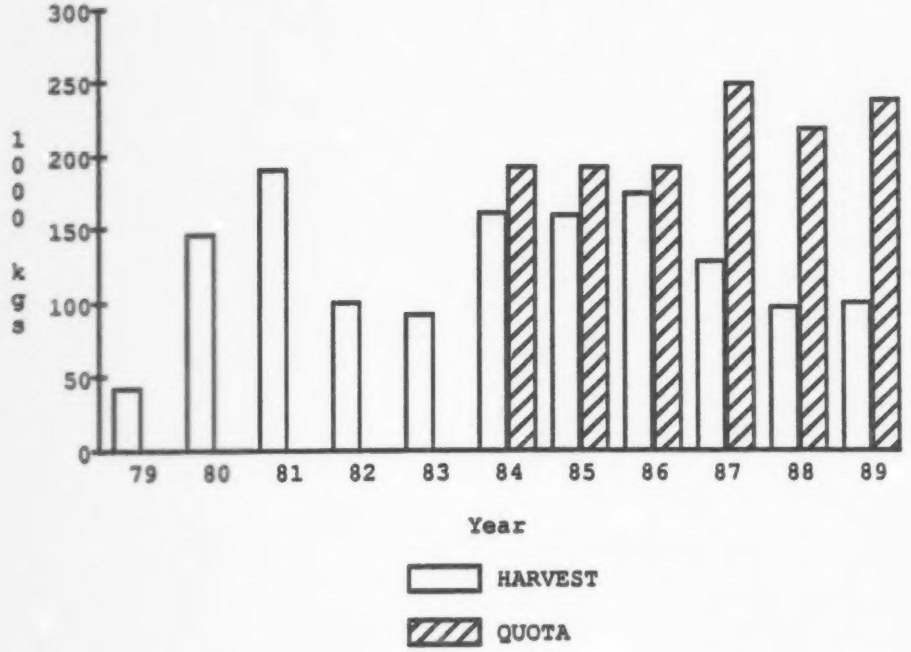


Figure 91. Annual gill net effort (km) for yellow perch in management area 4-6 (LH09), 1979 - 1989.

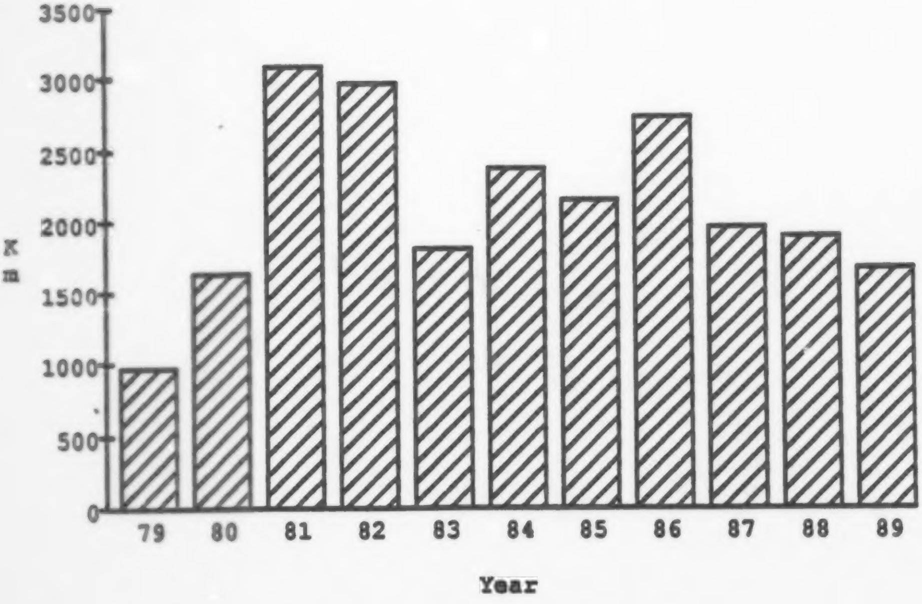


Figure 92. Annual trap net effort (# of nets) for yellow perch in management area 4-6 (LH09), 1979 - 1989.

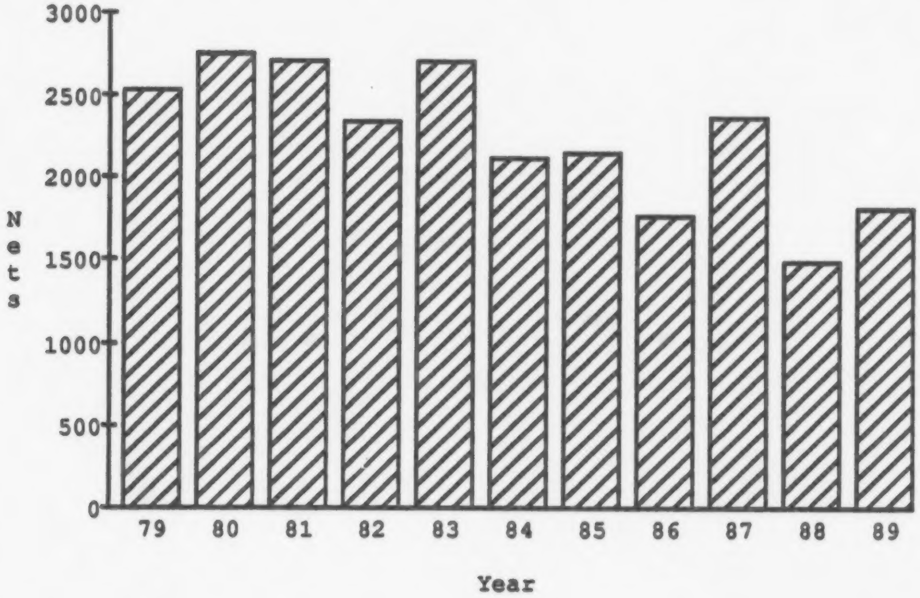


Figure 93. Yellow perch gill net CUEs (kgs/km) for management area 4-6 (LH09), 1979 - 1989.

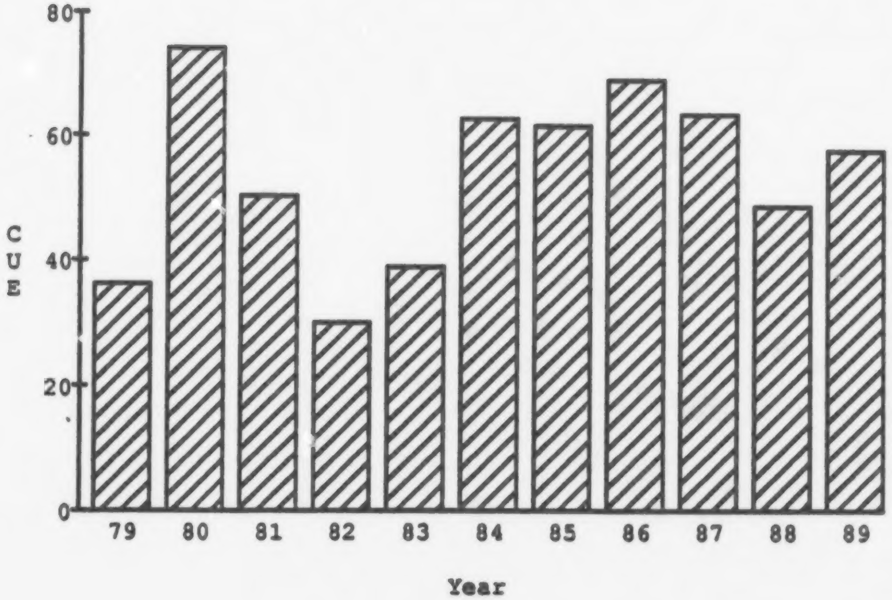


Figure 94. Yellow perch trap net CUEs (kgs/net) for management area 4-6 (LH09), 1979 - 1989.

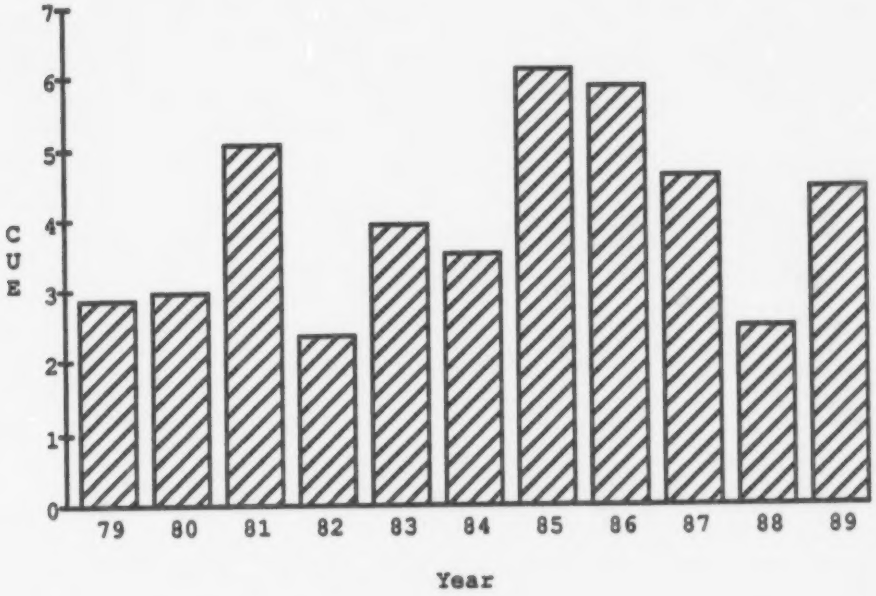


Table 27. Age-class composition of yellow perch caught in gill nets in management area 4-6 (LH09), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	835	0	0	0	0	0
2	76166	0	20451	122192	164229	13380	0	0	5170	16400	42777
3	96482	675325	231523	237542	269260	865949	339556	409935	74310	297260	655116
4	57615	251646	874801	83567	96253	173714	586632	765898	524914	271468	49190
5	30446	23862	252252	164633	44811	17822	77109	407896	385664	162562	14792
6	10094	7031	6951	12210	42994	8139	7074	19577	112798	35062	3727
7	3282	2929	9496	5636	3491	2130	2869	841	10836	2206	2624
8	895	1758	0	1121	0	0	0	611	929	1208	677
9	0	0	1117	1681	0	0	0	611	492	0	595
10	0	0	0	0	537	0	222	0	0	0	0
11	0	0	0	0	0	0	0	0	0	82	0
12	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0
>13	0	0	0	0	0	0	0	0	0	0	0

Table 28. Age-class composition of yellow perch caught in trap nets in management area 4-6 (LH09), 1982 - 1989.

AGE	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	0	0	0
2	977	10426	627	1104	0	745	81	1321
3	7264	31972	46913	38986	7015	2357	3352	25656
4	5364	10281	8421	45527	42597	17241	8432	7790
5	10670	6115	799	6164	14425	28070	4783	6264
6	1106	6115	640	338	2510	12490	4776	1922
7	507	1385	652	363	1328	3237	1268	3317
8	296	362	713	438	109	2911	238	1572
9	162	453	0	75	193	0	0	242
10	0	0	62	0	78	0	41	96
11	0	0	62	151	0	447	0	0
12	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
>13	0	0	0	0	0	0	0	0

Figure 95. Walleye harvest and quota in kilograms for management area 4-6 (LH09), 1979 - 1989.

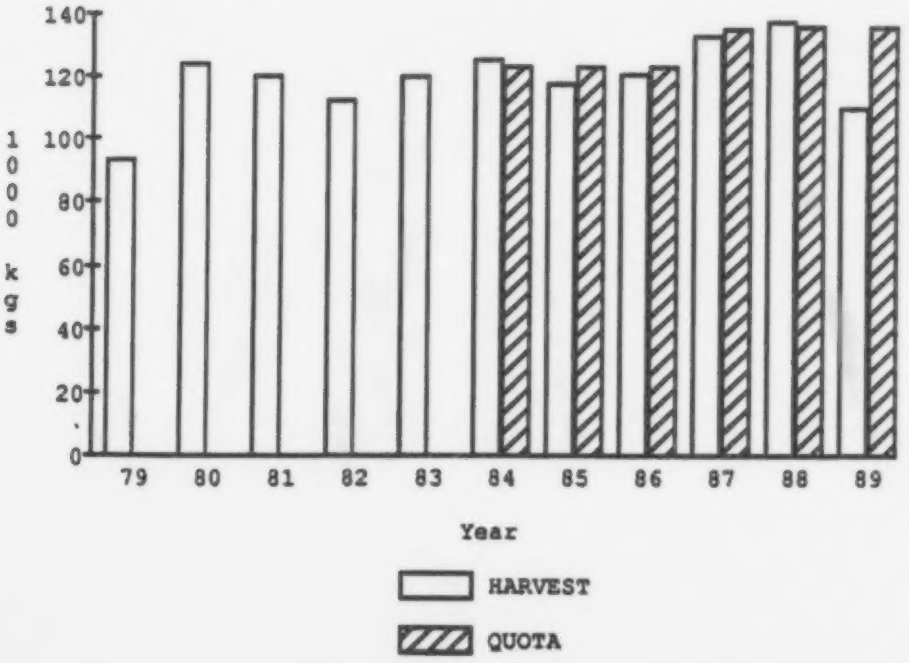


Figure 96. Walleye gill net harvest in kilograms for management area 4-6 (LH09), 1979 - 1989.

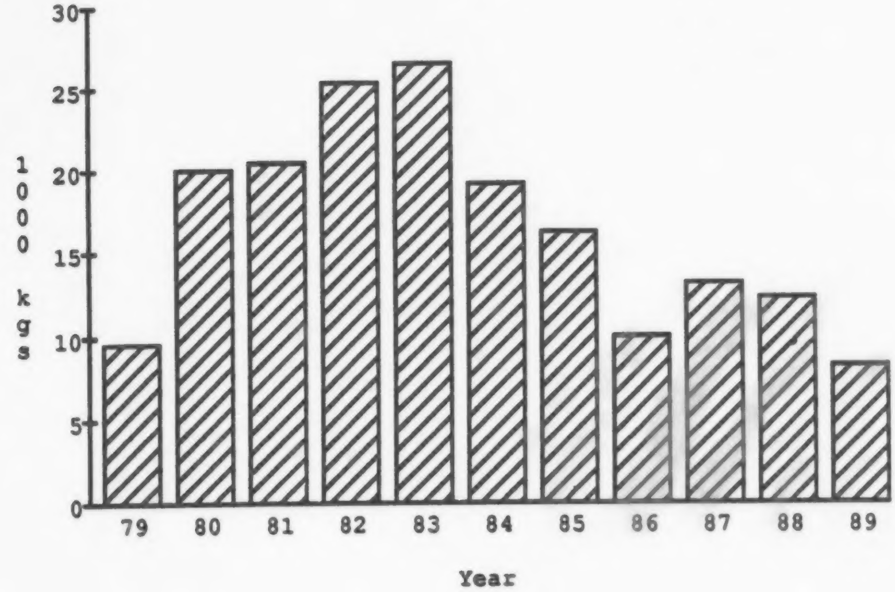


Figure 97. Walleye trap net harvest in kilograms for management area 4-6 (LH09), 1979 - 1989.

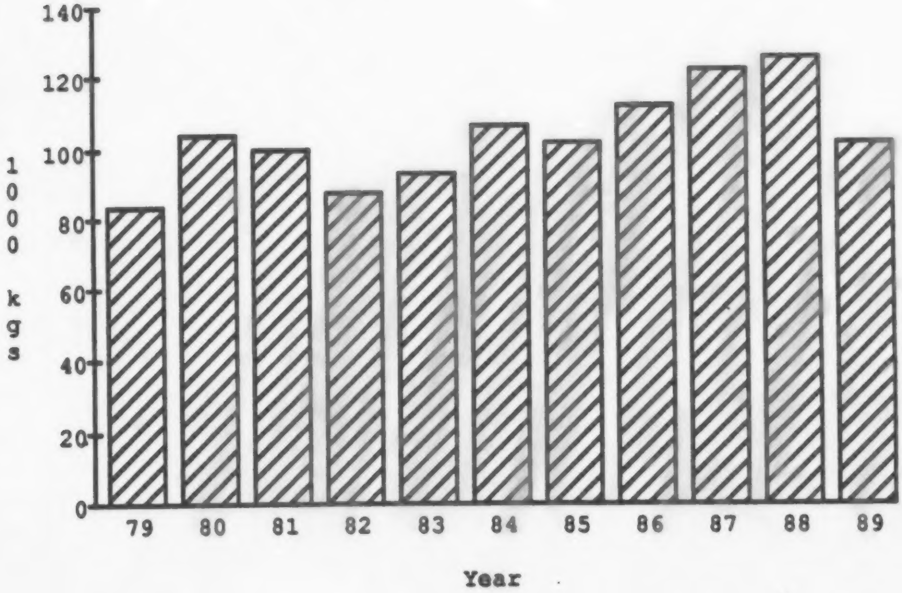


Figure 98. Annual gill net effort (km) for walleye in management area 4-6 (LH09), 1979 - 1989.

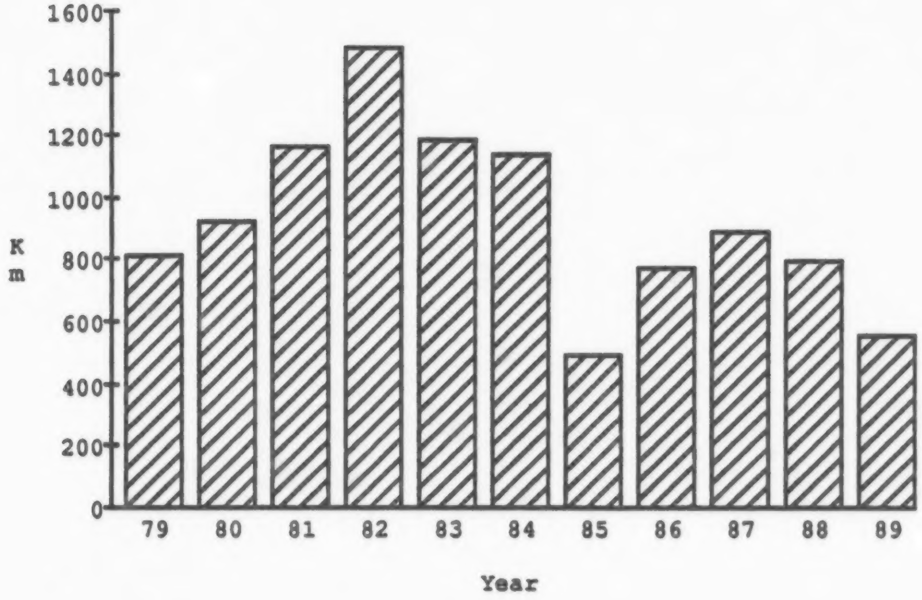


Figure 99. Annual trap net effort (# of nets) for walleye in management area 4-6 (LH09), 1979 - 1989.

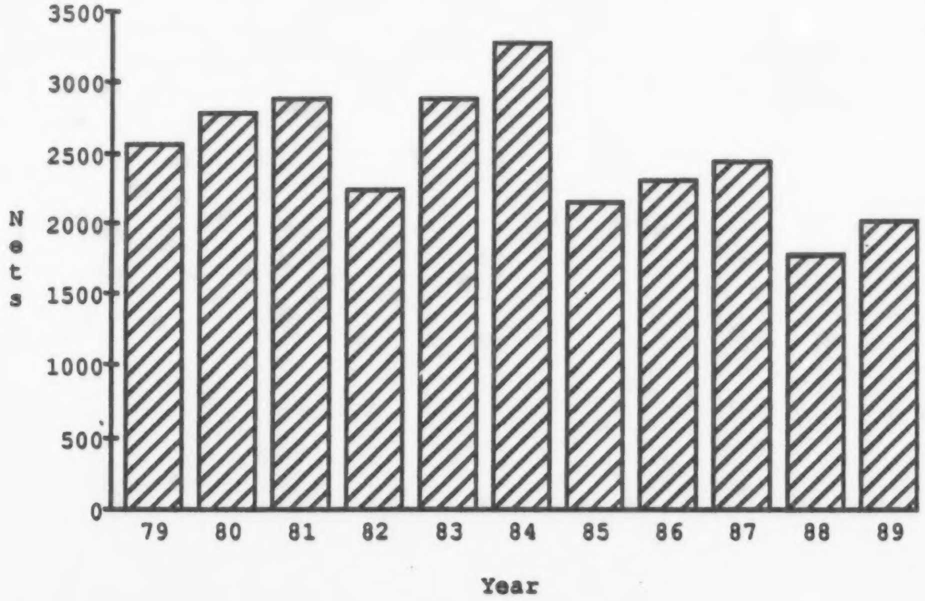


Figure 100. Walleye gill net CUEs (kgs/km) for management area 4-6 (LH09), 1979 - 1989.

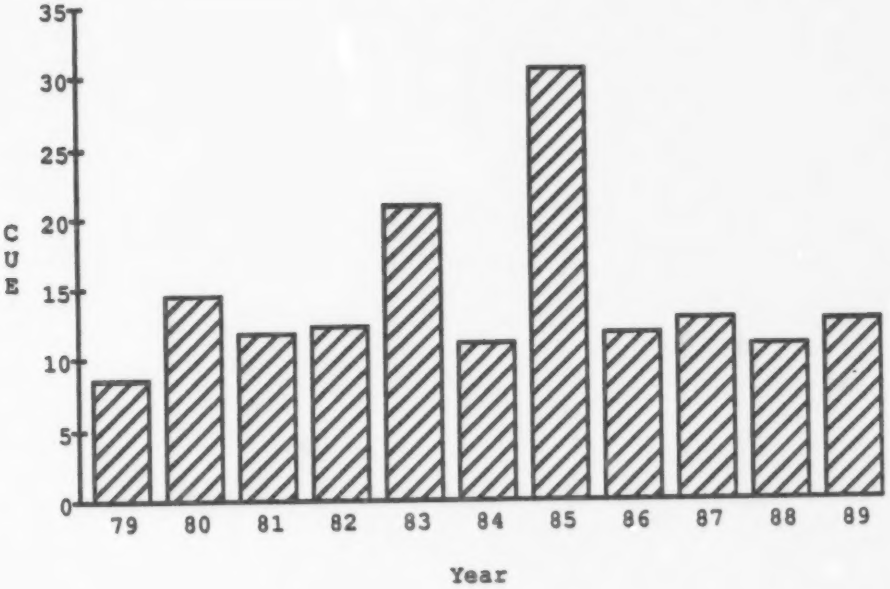


Figure 101. Walleye trap net CUEs (kgs/net) for management area 4-6 (LH09), 1979 - 1989.

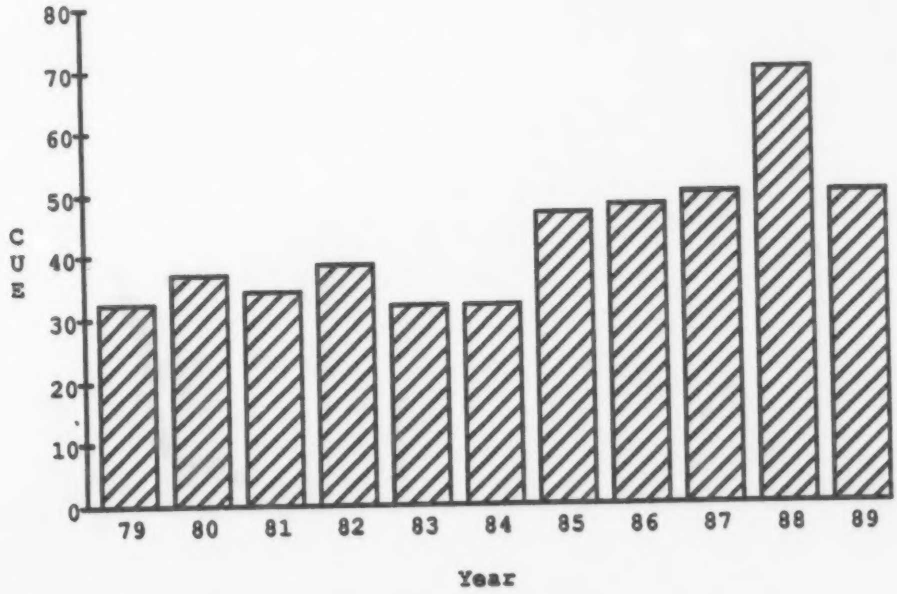


Table 29. Age-class composition of walleye caught in trap nets in management area 4-6 (LH09), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	115	381	1456	0	1506	858	215	286	293	1500	1785
2	67689	7410	25804	18308	15247	97187	2412	22911	42270	29008	5082
3	5143	109515	9704	29297	80757	17375	117167	10378	76358	53907	54242
4	10228	4632	62617	8334	15041	37095	6448	65787	8790	42338	20321
5	7263	3859	3808	29132	4123	9017	7806	8113	22012	6727	15578
6	2607	3264	2193	1417	8579	3911	1986	7021	2575	14480	2700
7	2508	921	2372	619	602	8679	2150	3415	2856	1556	7185
8	3241	1767	341	2161	911	820	3117	2364	801	2548	2237
9	1524	1773	1355	1080	408	287	323	1209	1159	693	1479
10	231	1533	553	1382	378	191	238	502	621	668	362
11	346	434	1199	410	18	342	144	171	158	160	623
12	231	125	262	326	244	96	238	0	0	0	519
13	0	325	80	0	86	0	0	0	0	0	0
>13	0	47	0	0	0	0	0	0	0	0	0

Figure 102. Lake trout/backcross harvest and quota in kilograms for management area 4-6 (LH09), 1979 - 1989.

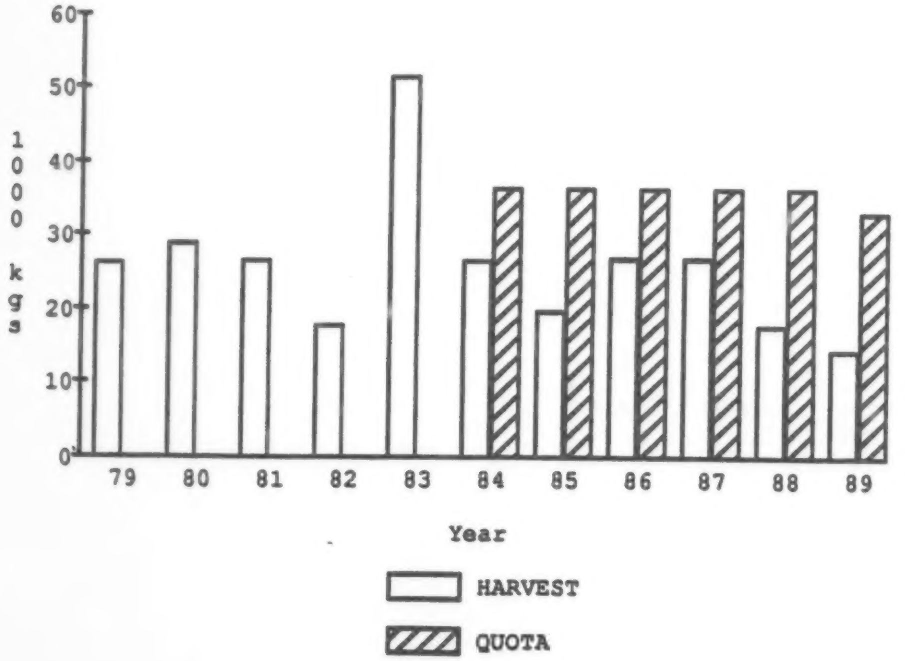


Figure 103. Lake trout/backcross gill net CUEs (kgs/km) for management area 4-6 (LH09), 1979 - 1989.

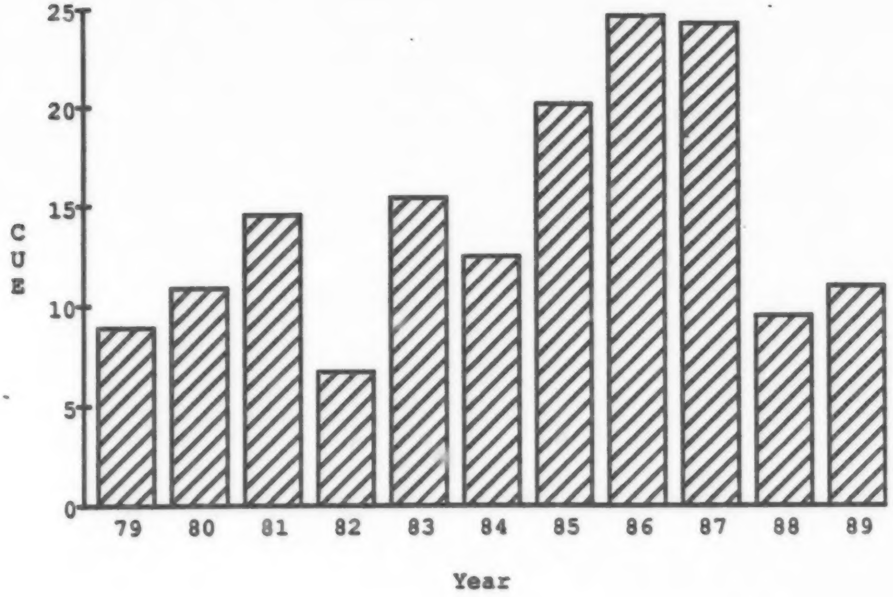
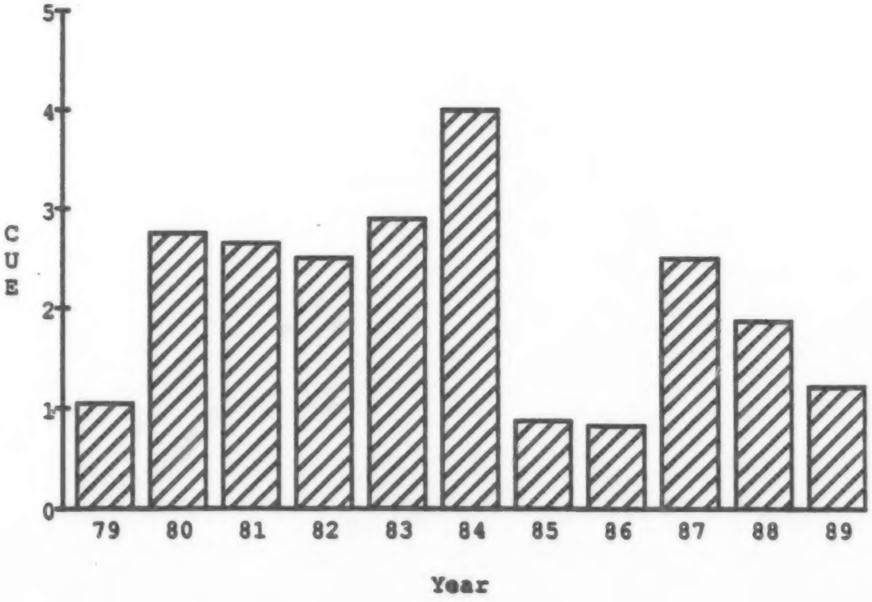


Figure 104. Lake trout/backcross trap net CUEs (kgs/net) for management area 4-6 (LH09), 1979 - 1989.



MANAGEMENT AREA 4-7

Lake Whitefish

- The allocation was virtually unchanged at 67,909 kgs in 1989.
- The harvest rose 64% to 59,983 kgs in 1989, 88% of the allocation (Fig. 105).
- Gill net effort rose 42% to 312 kms in 1989 (Fig. 106).
- CUE increased 15% to 192 kgs/km in 1989 (Fig. 107).
- Age 4 fish contributed substantially to the harvest in 1989 as predicted (Table 32). However, the 1986 year-class (age 3) did not begin to recruit in the numbers predicted.
- Abundance increased in 1989 as predicted.
- Pre-recruit indexing in LH05 indicates that recruitment will increase in 1990 as the strong 1986 year-class enters the fishery as four-year-olds. Recruitment will continue to improve in 1991 as another strong year-class (1987) enters the fishery.
- Abundance should be higher in 1990 with age 4 and 5 fish prominent in the catch.
- Abundance should continue to increase in 1991 with age 4,5 and 6 fish prominent in the catch.

Chub

- Allocation stayed at 53,764 kgs in 1989.
- Harvest rose 19% to 49,596 kg, approximately 92% of the allocation in 1989 (Fig. 108)
- Effort rose 7% to 513 kms in 1989 (Fig. 109).
- CUE rose 12% to 97 kgs/km in 1989 (Fig. 110).
- Yield rose to 0.36 kgs/ha in 1989 (Fig. 111).
- Ages 5,6,7 were the mainstay of the fishery in 1989 (Table 33).
- Abundance rose in 1989 as predicted.
- Pre-recruit data from indexing in LH05 and examination of commercial discards (10% of reported catch in 1989) suggests that recruitment should remain strong in 1990 due to the continuing entry of the 1983 and 1984 year-classes. Subsequent year-classes are much weaker so recruitment will decline in 1991.
- Abundance should stay high in 1990 and begin to decrease in 1991.

Table 30. Round weight (kgs) and value ($) by species for management area 4-7 (LH04), 1989.

SPECIES	HARVEST	VALUE
Lake trout	31	113
Lake whitefish	59893	127214
Lake herring	3	2
Round whitefish	20	8
Chub	49596	92742
Suckers	317	0
Walleye	82	320
Discarded (mixed)	0	0

Table 31. Round weight and quota in kilograms by species for management area 4-7 (LH04), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	59893	67909	88.2
Chub	49596	53764	92.2
Yellow perch	0	1587	0.0
Walleye	82	450	18.2
Lake trout/backcross	31	744	4.2
Northern pike	0	225	0.0
Pink salmon	0	819	0.0
Sturgeon	0	0	0.0
Channel catfish	0	999999	0.0

Figure 105. Lake whitefish harvest and quota in kilograms for management area 4-7 (LH04), 1979 - 1989.

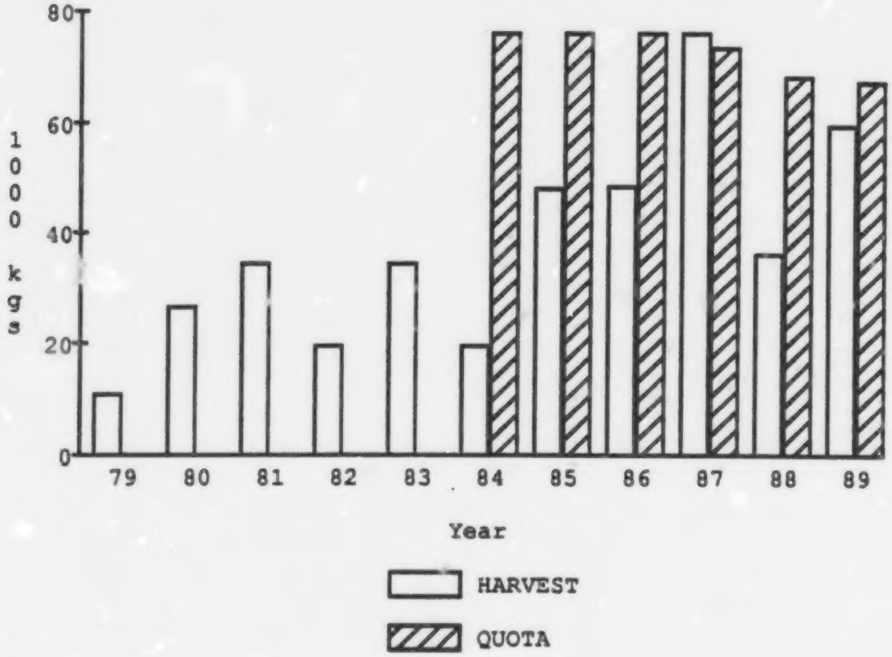


Figure 106. Annual gill net effort (km) for lake whitefish in management area 4-7 (LH04), 1979 - 1989.

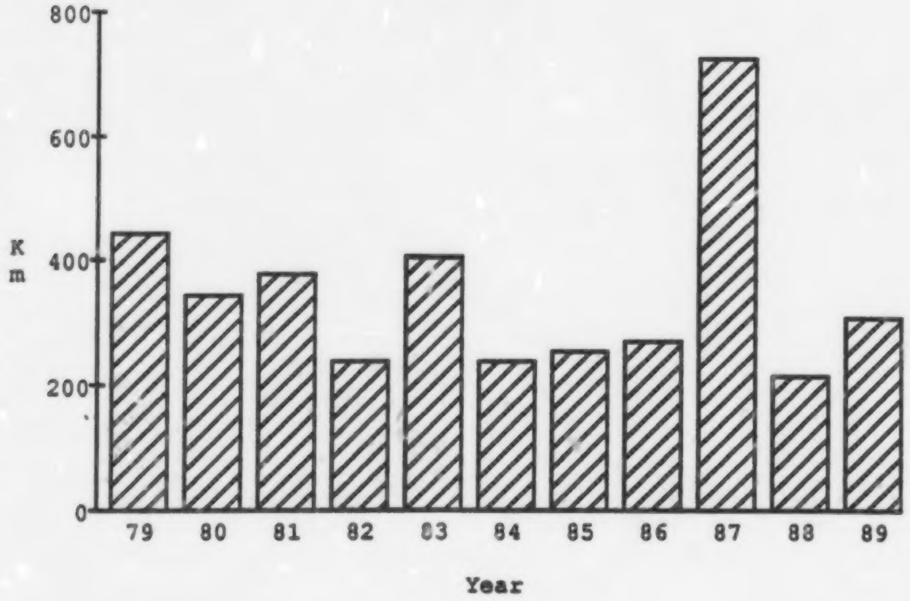


Figure 107. Lake whitefish gill net CUEs (kgs/km) for management area 4-7 (LH04), 1979 - 1989.

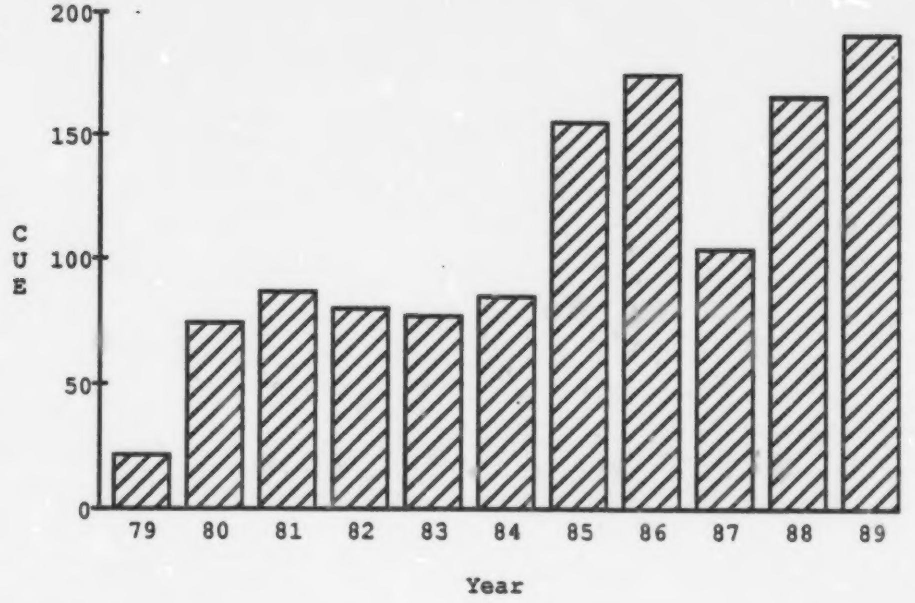


Table 32. Age-class composition of lake whitefish caught in gill nets in management area 4-7 (LH04), 1980 - 1989.

AGE	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	21411	788	1982	7295	1068	4378	1739	3275	5535	2564
4	155	21914	2510	12709	9964	14961	32281	25361	6989	27519
5	1221	555	6278	1394	1327	11840	3602	18369	7461	7161
6	531	183	101	3535	132	1436	2227	4254	1818	1767
7	0	376	306	0	525	165	260	1423	718	1727
8	0	79	92	159	0	275	0	566	498	245
9	0	157	148	159	0	0	53	420	139	245
10	0	23	92	0	0	0	0	20	61	122
11	78	183	0	0	0	0	0	20	0	122
12	0	0	0	0	0	0	0	44	0	122
13	78	0	0	0	0	0	0	0	0	0
>13	0	23	34	0	0	0	0	0	0	0

Figure 108. Chub harvest and quota in kilograms for management area 4-7 (LH04), 1979 - 1989.

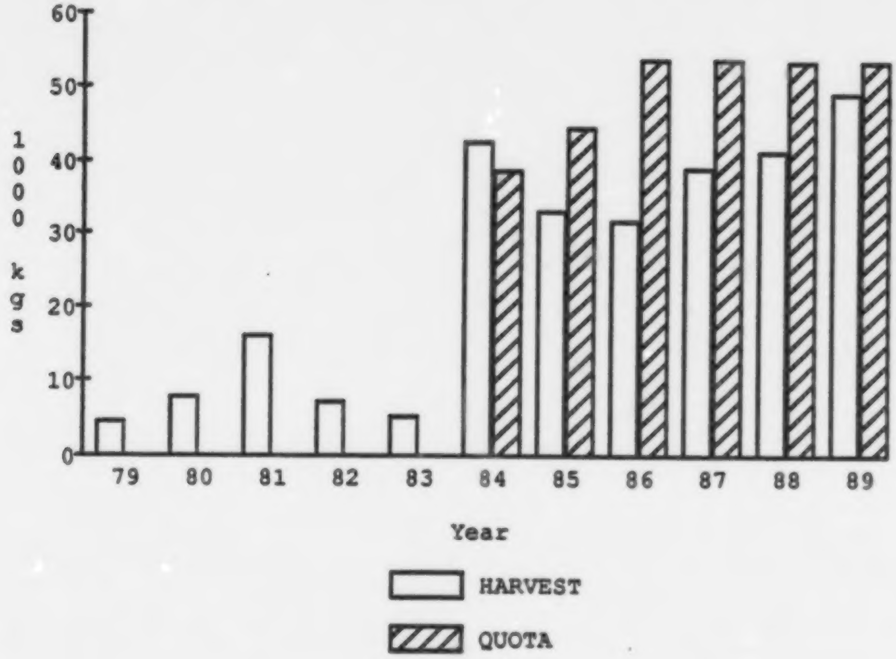


Figure 109. Annual gill net effort (km) for chub in management area 4-7 (LH04), 1979 - 1989.

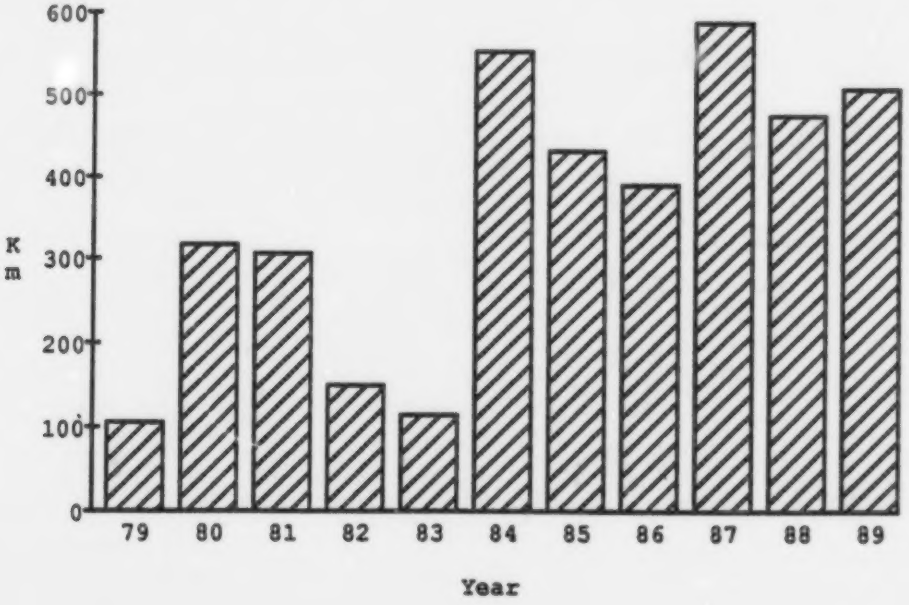


Figure 110. Chub gill net CUEs (kgs/km) for management area 4-7 (LH04), 1979 - 1989.

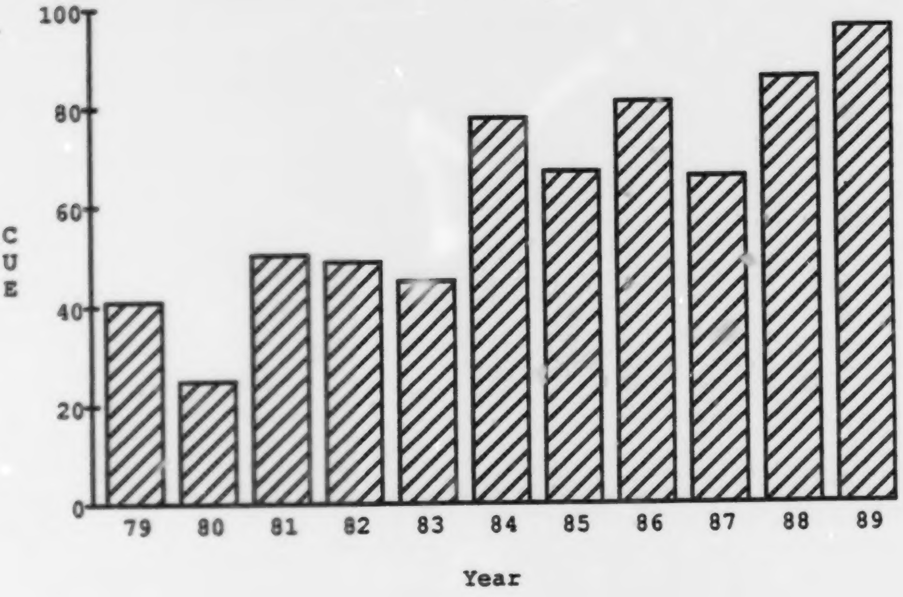


Figure 111. Chub yield (kgs/ha) for management area 4-7 (LH04), 1979 - 1989.

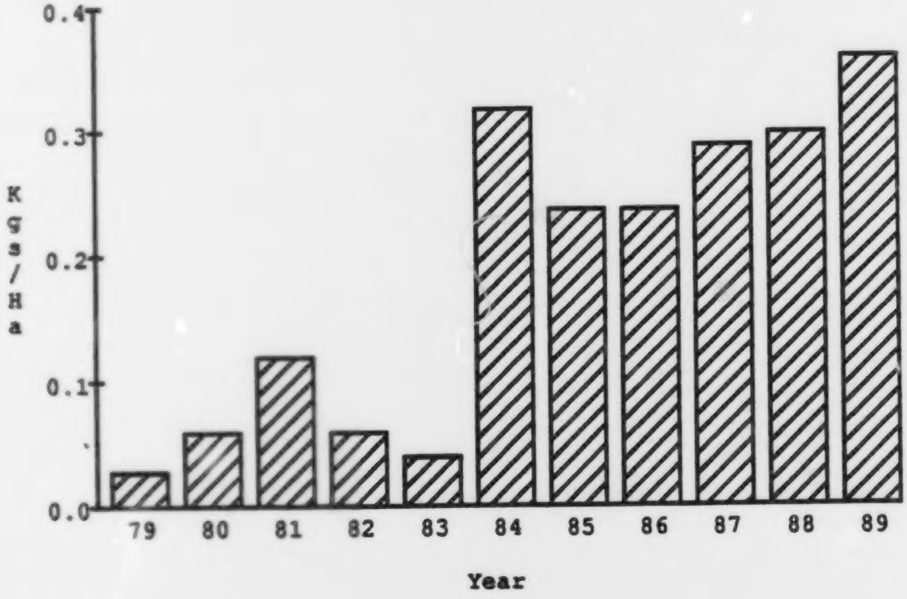


Table 33. Age-class composition of chub caught in gill nets in management area 4-7 (LH04), 1980 - 1989.

AGE	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0			0	0	0	0	0	0
2	747	677			0	0	0	0	0	0
3	18923	4477			4366	5448	165	0	0	0
4	8508	74427			19395	21872	8749	11643	7055	4521
5	5195	4528			41172	34150	35670	56795	51919	67272
6	2995	364			82873	54067	64587	44049	87720	97011
7	5240	1040			54050	43083	38237	58558	48655	67748
8	2199	364			1141	10649	16517	23635	22050	9575
9	0	0			2119	0	3401	14793	10339	0
10	0	0			0	0	0	2596	1285	0
11	0	0			0	0	422	301	0	0
12	0	0			0	0	0	603	0	0
13	0	0			0	0	0	187	0	0
>13	0	0			0	0	0	0	0	0

Table 34. Round weight (kgs) by species by management area for Georgian Bay, 1989.

Species	Area 5-1	Area 5-2	Area 5-3	Area 5-4	Area 5-5	Area 5-6	Area 5-7	Area 5-8	Area 5-9	Total
Lake sturgeon	52	0	0	0	0	0	23	0	73	148
Pink salmon	5	0	0	0	0	0	2	0	4	11
Lake trout	845	0	611	0	0	4820	713	4584	709	12282
Lake whitefish	7370	1683	8998	2997	3900	2158	6572	4114	18663	56455
Lake herring	157	2276	0	135	89	72	364	0	15	3108
Round whitefish	4798	110	89	171	442	40	68	0	32	5750
Chub	3799	109	149738	779	23767	41194	9870	22366	11171	262793
Northern pike	435	232	0	0	0	5	139	0	0	811
Suckers	226	8264	861	49	0	0	1089	0	0	10489
Carp	64	790	19	2	0	0	526	0	14	1415
Channel catfish	0	15	3	1	0	29	167	0	89	304
Bullhead	0	892	0	0	0	0	0	0	0	892
Burbot	0	0	1179	52	0	0	1312	1814	0	4357
White bass	0	0	0	0	0	0	201	0	0	201
Rock bass	0	0	22	0	0	0	26	0	0	48
Yellow perch	1907	1	71	682	4840	108	1693	4	129	9435
Walleye	1351	1940	0	63	0	1	1375	0	131	4861
Discarded (mixed)	0	263	0	0	0	0	0	0	0	263
Total	21009	16575	161591	4931	33038	48427	24140	32882	31030	373623

Table 35. Estimated effort by management area for Georgian Bay, 1989.

MANAGEMENT AREA	GILL NET (1000 m)		
	SMALL MESH	LARGE MESH	TOTAL
5-1	127	136	236
5-2	3	115	118
5-3	1770	61	1831
5-4	22	38	60
5-5	335	51	386
5-6	376	3	379
5-7	104	129	233
5-8	161	27	188
5-9	88	140	228
TOTAL	2986	700	3659

GEORGIAN BAY

MANAGEMENT AREA 5-1

Lake Whitefish

- Allocation was reduced by 15% to 35,509 kgs in 1989.
- The harvest continued to decline in 1989 with only 21% of the allocation being taken (Fig. 112).
- Effort dropped 79% to 122 kms in 1989 (Fig. 113).
- Gill net CUE quadrupled to 61 kgs/km in 1989 (Fig. 114).
- Extreme fluctuations in harvest and effort preclude using CUE as an indicator of abundance.
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Chub

- Allocation remained at 17,052 kgs in 1989.
- The harvest further declined in 1989 to 22% of the allocation (Fig. 115).
- Effort dropped from 226 to 15 kms in 1989 (Fig. 116).
- Gill net CUE increased ten-fold in 1989 (Fig. 117).
- Extreme fluctuations in harvest and effort preclude using CUE as an indicator of abundance.
- Yield dropped to 2.2 kgs/ha in 1989 (Fig. 118).
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Yellow perch

- Allocation was reduced by 14% to 25,801 kgs in 1989.
- The harvest dropped from 6,994 to 1,907 kgs in 1989, 7% of the allocation (Fig. 119).
- Gill net effort dropped 82% to 104 kms in 1989 (Fig. 120).
- Gill net CUE increased by 50% to 18.3 kgs/km in 1989 (Fig. 121).
- Extreme fluctuations in harvest and effort preclude using CUE as an indicator of abundance.
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Table 36. Round weight (kgs) and value ($) by species for management area 5-1 (GB01), 1989.

SPECIES	HARVEST	VALUE
Lake sturgeon	52	230
Pink salmon	5	10
Lake trout	845	1759
Lake whitefish	7370	12803
Lake herring	157	105
Round whitefish	4798	3382
Chub	3799	6552
Northern pike	435	593
Suckers	226	0
Carp	64	47
Yellow perch	1907	6843
Walleye	1351	4326
Discarded (mixed)	0	0

Table 37. Round weight and quota in kilograms by species for management area 5-1 (GB01), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	7370	35509	20.8
Chub	3799	17052	22.3
Yellow perch	1907	25801	7.4
Walleye	1351	1971	68.5
Lake trout/backross	845	2596	32.6
Northern pike	435	1759	24.7
Pink salmon	5	637	0.8
Sturgeon	52	637	8.2

Figure 112. Lake whitefish harvest and quota in kilograms for management area 5-1 (GB01), 1979 - 1989.

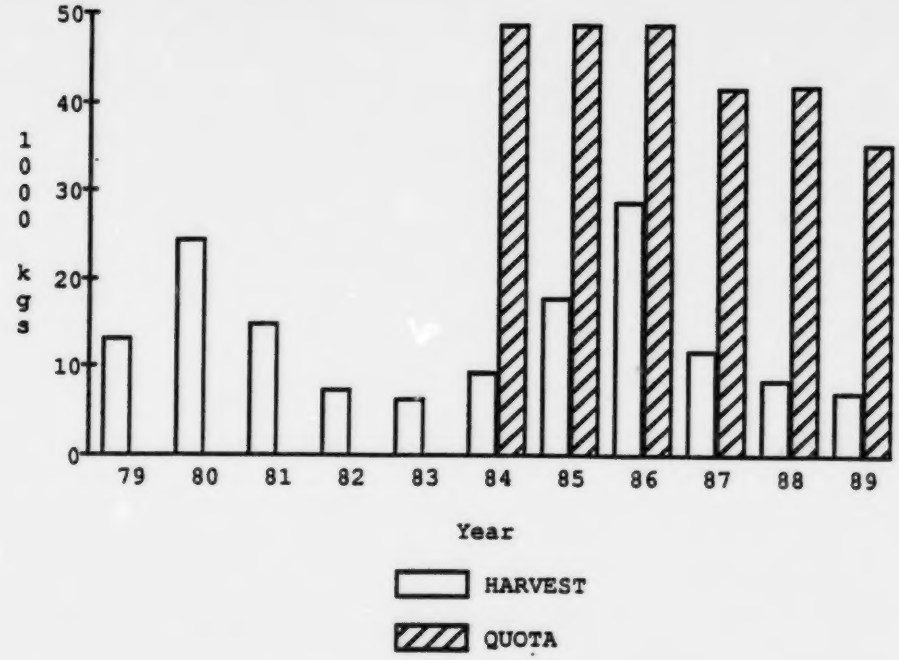


Figure 113. Annual gill net effort (km) for lake whitefish in management area 5-1 (GB01), 1979 - 1989.

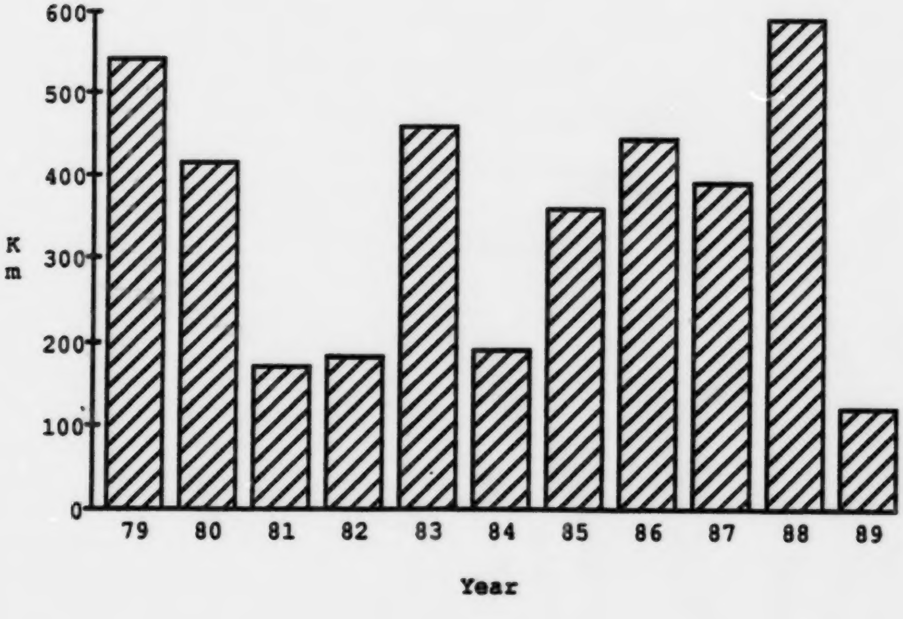


Figure 114. Lake whitefish gill net CUEs (kgs/km) for management area 5-1 (GB01), 1979 - 1989.

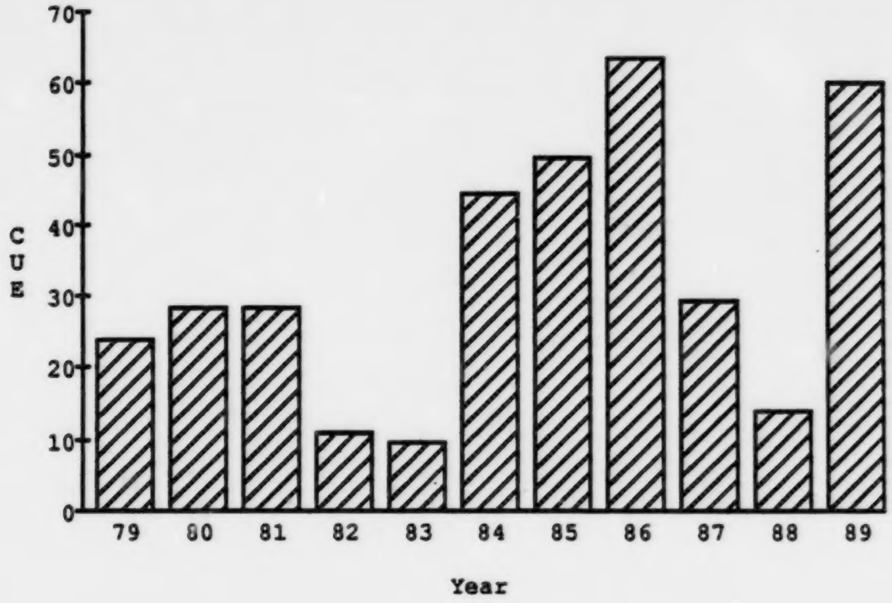


Figure 115. Chub harvest and quota in kilograms for management area 5-1 (GB01), 1979 - 1989.

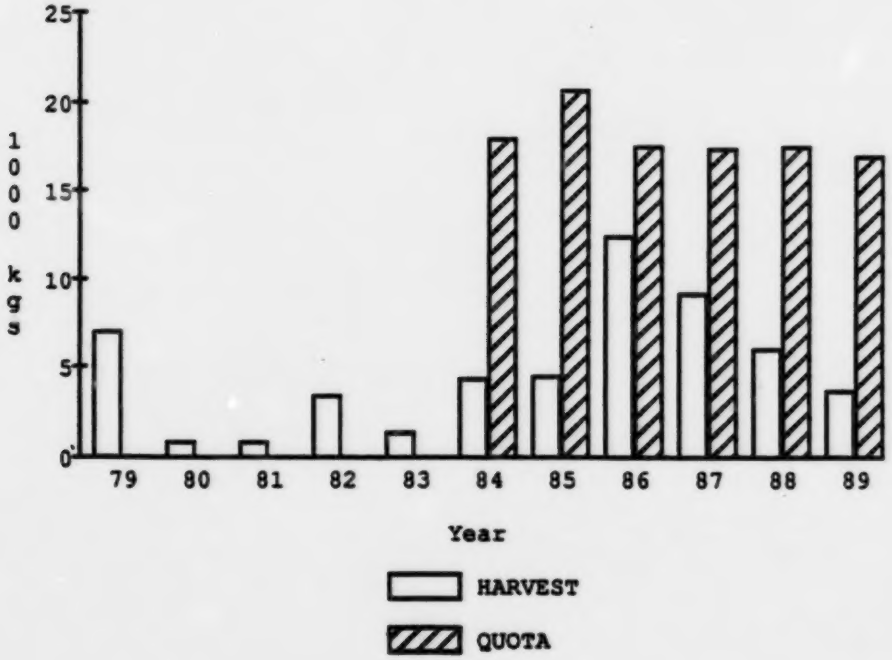


Figure 116. Annual gill net effort (km) for chub in management area 5-1 (GB01), 1979 - 1989.

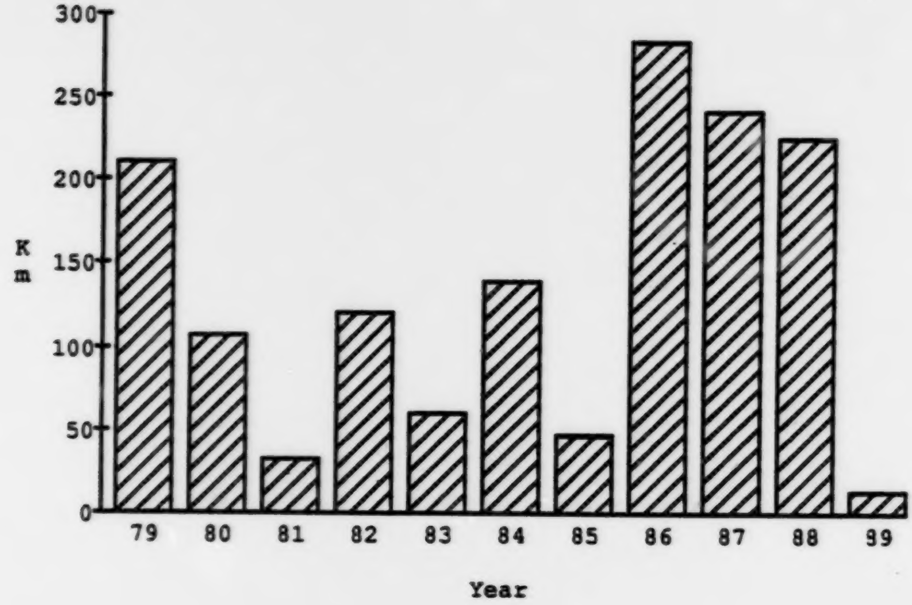


Figure 117. Chub gill net CUEs (kgs/km) for management area 5-1 (GB01), 1979 - 1989.

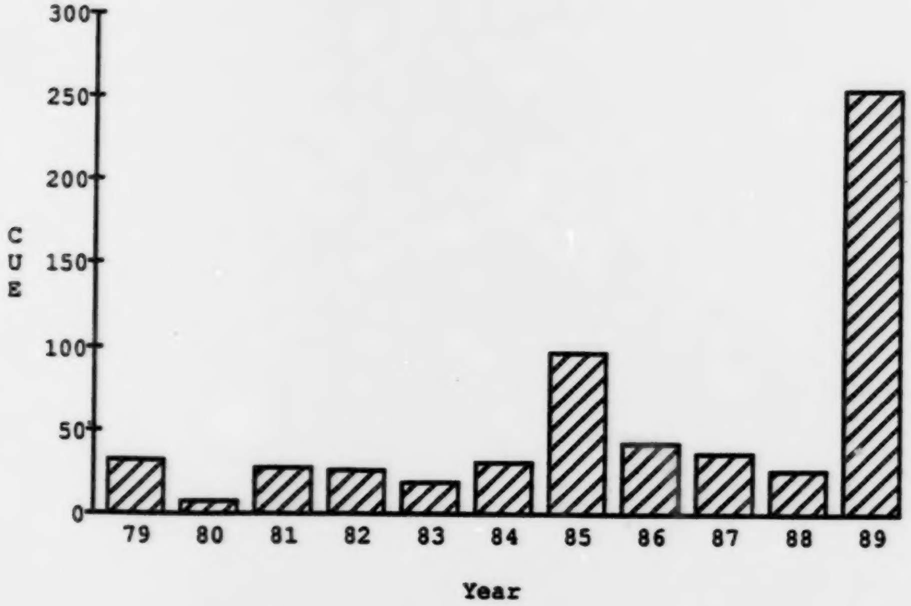


Figure 118. Chub yield (kgs/ha) for management area 5-1 (GB01), 1979 - 1989.

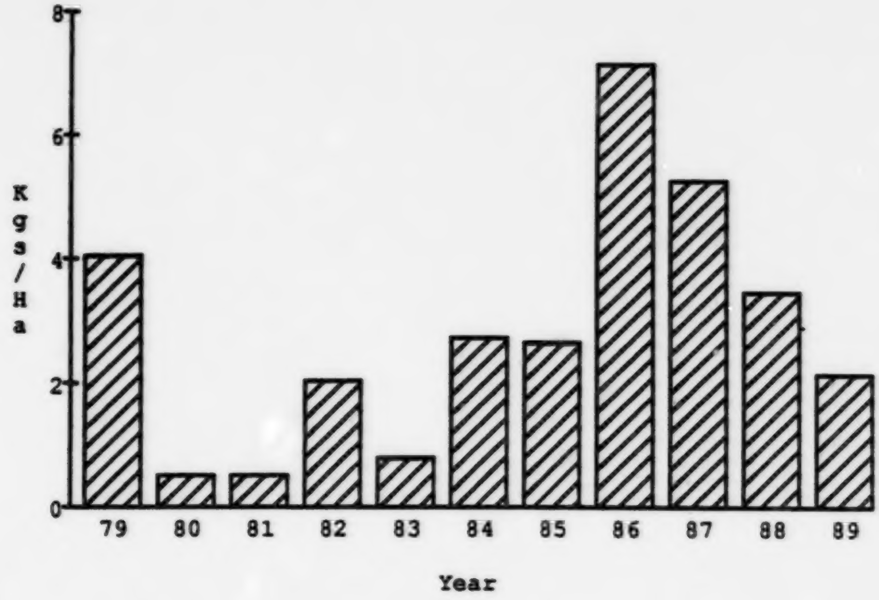


Figure 119. Yellow perch harvest and quota in kilograms for management area 5-1 (GB01), 1979 - 1989.

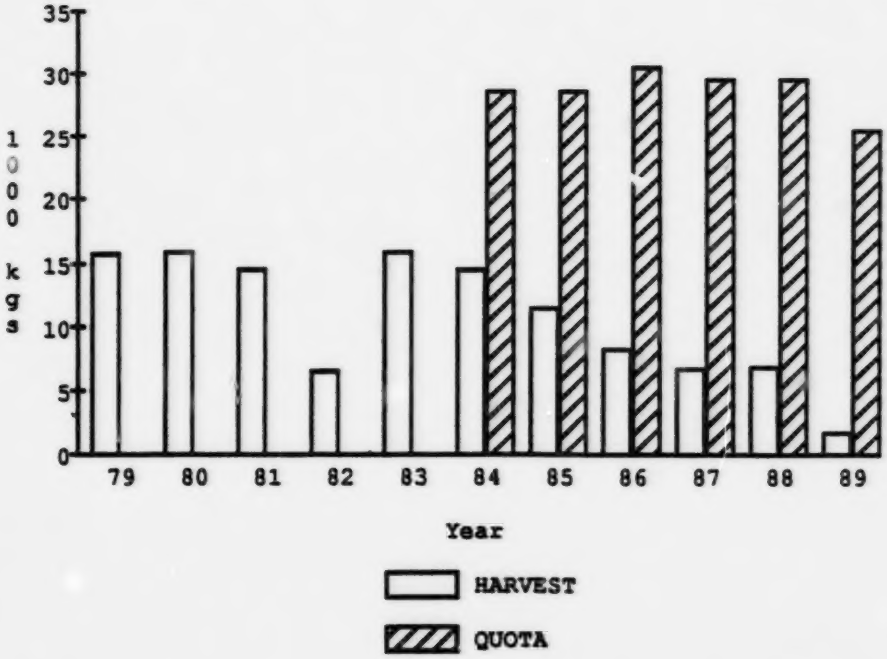


Figure 120. Annual gill net effort (km) for yellow perch in management area 5-1 (GB01), 1979 - 1989.

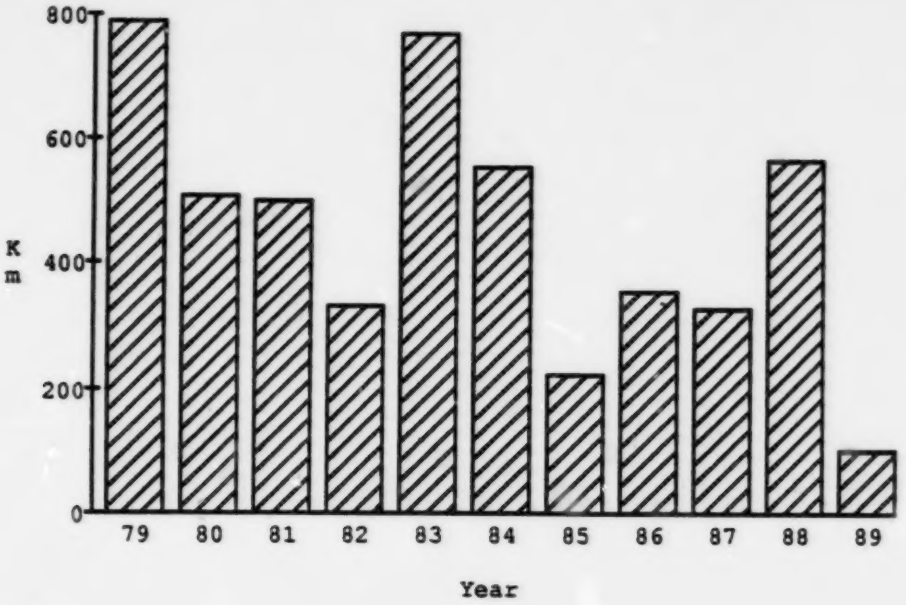


Figure 121. Yellow perch gill net CUEs (kgs/km) for management area 5-1 (GB01), 1979 - 1989.

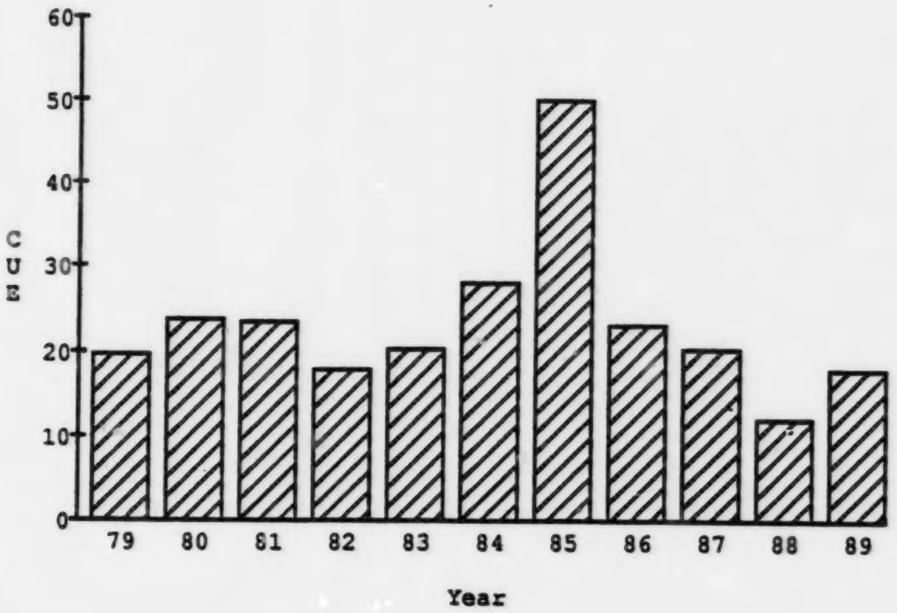
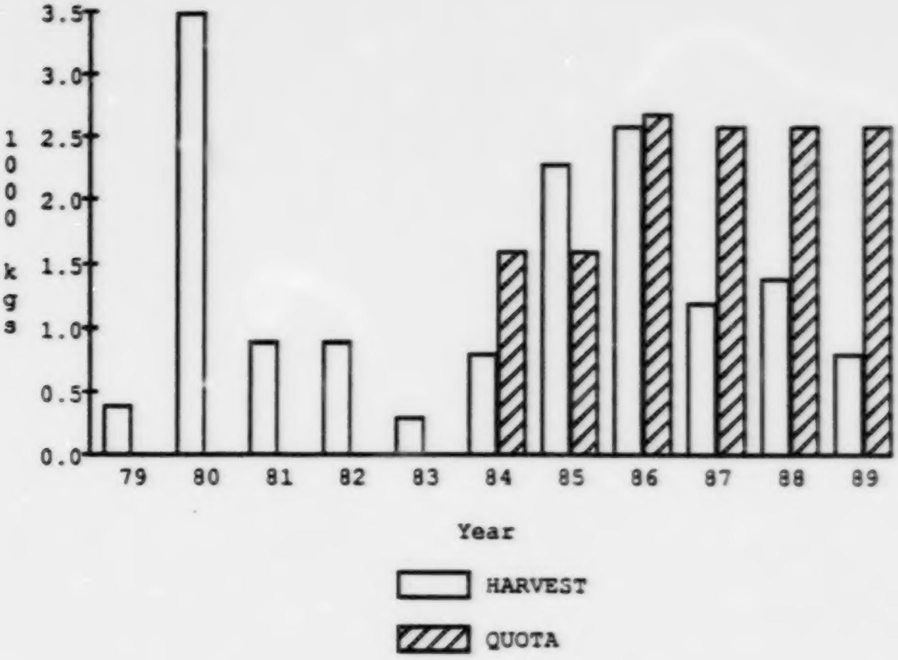


Figure 122. Lake trout/backcross harvest and quota in kilograms for management area 5-1 (GB01), 1979 - 1989.



MANAGEMENT AREA 5-2

Lake Whitefish

- Allocation dropped 10% to 19,258 kgs in 1989.
- The harvest level remained low in 1989, reaching only 9% of the allocation (Fig. 123).
- Gill net effort remained low at 33 kms in 1989 (Fig. 124).
- Gill net CUE dropped 45% to 51 kgs/km in 1989 (Fig. 125).
- Extremely low harvest and effort preclude using CUE as an indicator of abundance.
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Chub

- Allocation remained unchanged at 20,163 kgs in 1989.
- Harvest negligible at 0.5% of 1989 allocation (Fig. 126).
- Gill net effort plummeted to near zero (Fig. 127).
- Gill net CUE dropped 31% to 40 kgs/km in 1989 (Fig. 128).
- Extremely low harvest and effort preclude using CUE as an indicator of abundance.
- The yield dropped to 0.01 kgs/ha (Fig. 129).
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Yellow perch

- The allocation remained at 1,244 kgs in 1989.
- No harvest (Fig. 130).
- No effort (Fig. 131).
- No CUE (Fig. 132).
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Walleye

- The allocation remained unchanged at 4,591 kgs in 1989.
- Harvest dropped 10% to 1,940 kgs in 1989, approximately 42% of the allocation (Fig. 133).
- Gill net CUE dropped 58% to 21 kgs/km in 1989 returning to the level observed in recent years(Fig. 134).
- Extremely low harvest and effort preclude using CUE as an indicator of abundance.
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Table 38. Round weight (kgs) and value ($) by species for management area 5-2 (GB02), 1989.

SPECIES	HARVEST	VALUE
Lake whitefish	1683	4344
Lake herrinG	2276	2677
Round whitefish	110	113
Chub	109	251
Northern pike	232	343
Suckers	8264	61
Carp	790	0
Channel catfish	15	0
Bullhead	892	13
Yellow perch	1	2
Walleye	1940	9832
Discarded (mixed)	263	0

Table 39. Round weight and quota in kilograms by species for management area 5-2 (GB02), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	1683	19258	8.7
Chub	109	20163	0.5
Yellow perch	0	1244	0.0
Walleye	1940	4591	42.3
Lake trout/backross	0	0	0.0
Northern pike	232	455	51.0
Pink salmon	0	720	0.0
Sturgeon	0	46	0.0
Channel catfish	15	999999	0.0

Figure 123. Lake whitefish harvest and quota in kilograms for management area 5-2 (GB02), 1979 - 1989.

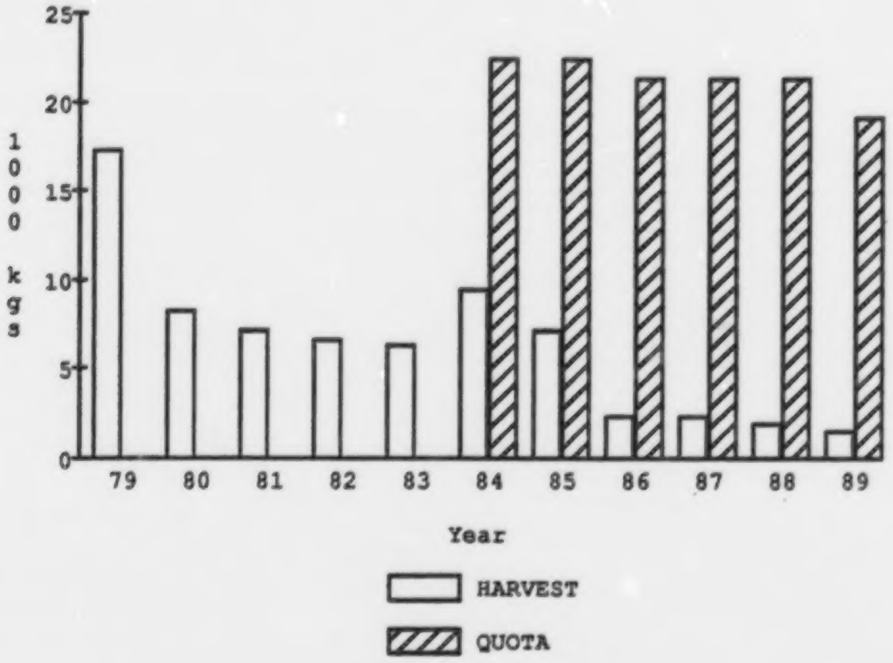


Figure 124. Annual gill net effort (km) for lake whitefish in management area 5-2 (GB02), 1979 - 1989.

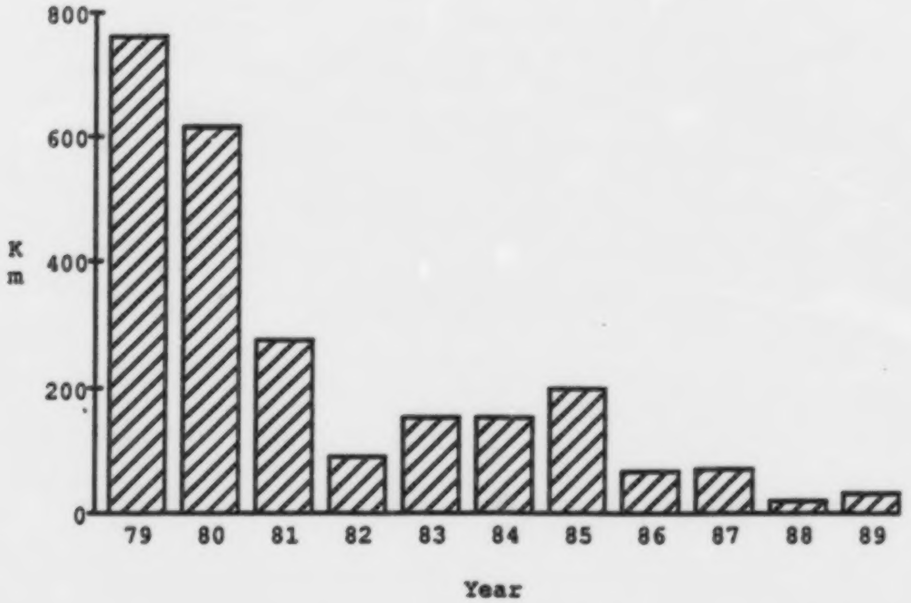


Figure 125. Lake whitefish gill net CUEs (kgs/km) for management area 5-2 (GB02), 1979 - 1989.

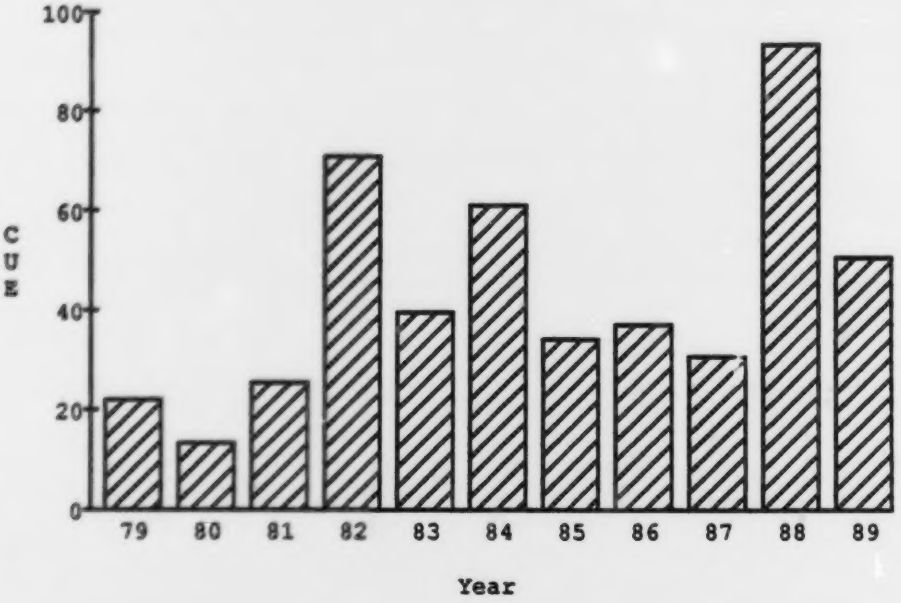


Figure 126. Chub harvest and quota in kilograms for management area 5-2 (GB02), 1979 - 1989.

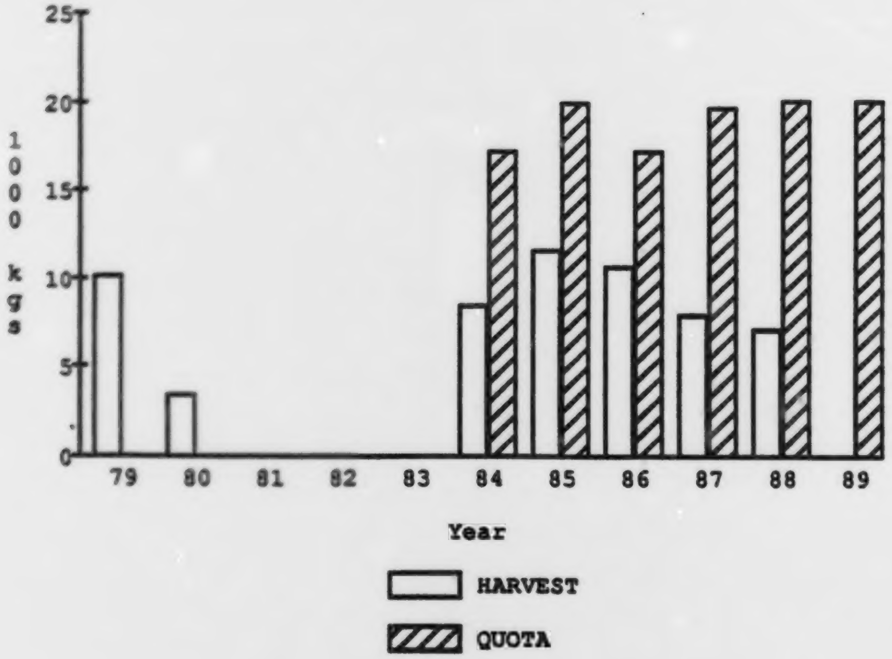


Figure 127. Annual gill net effort (km) for chub in management area 5-2 (GB02), 1979 - 1989.

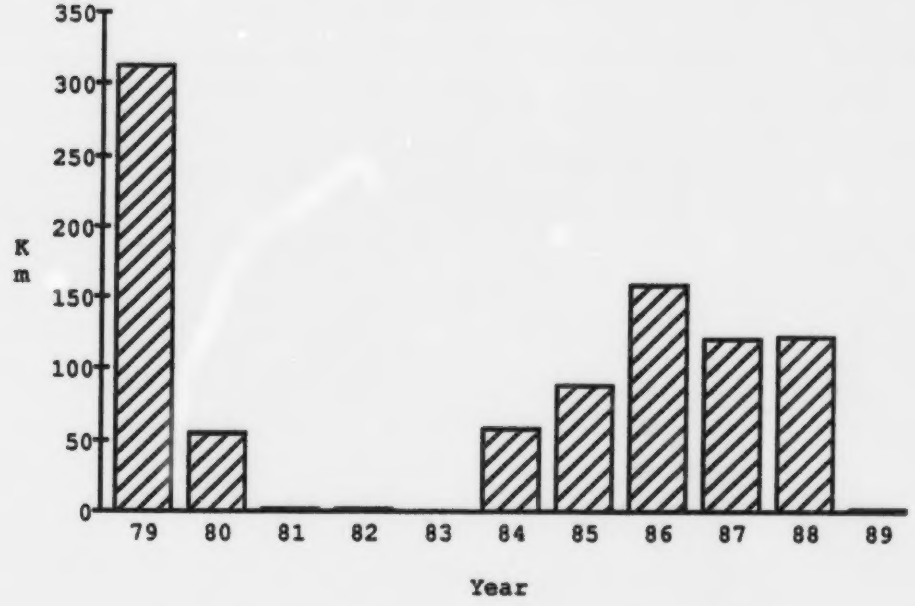


Figure 128. Chub gill net CUEs (kgs/km) for management area 5-2 (GB02), 1979 - 1989.

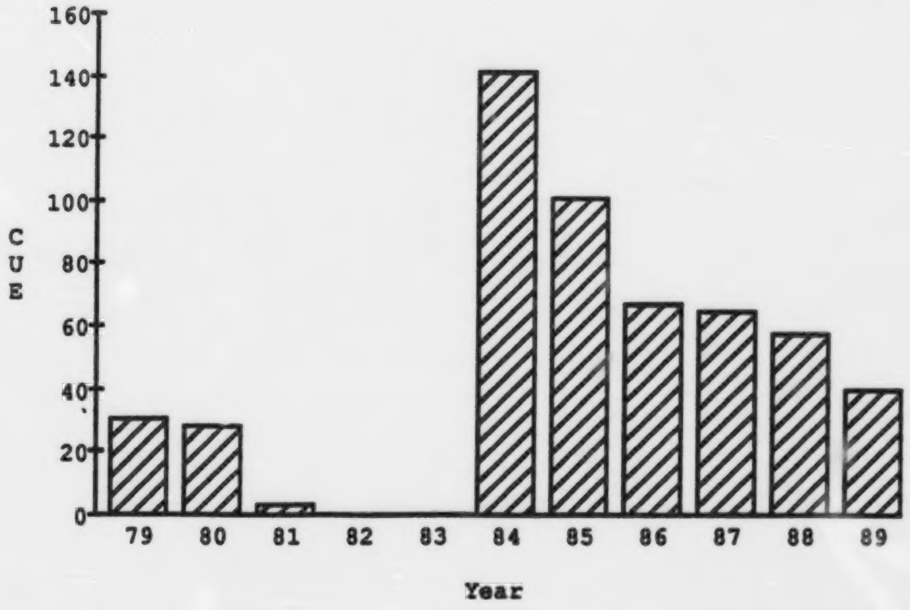


Figure 129. Chub yield (kgs/ha) for management area 5-2 (GB02), 1979 - 1989.

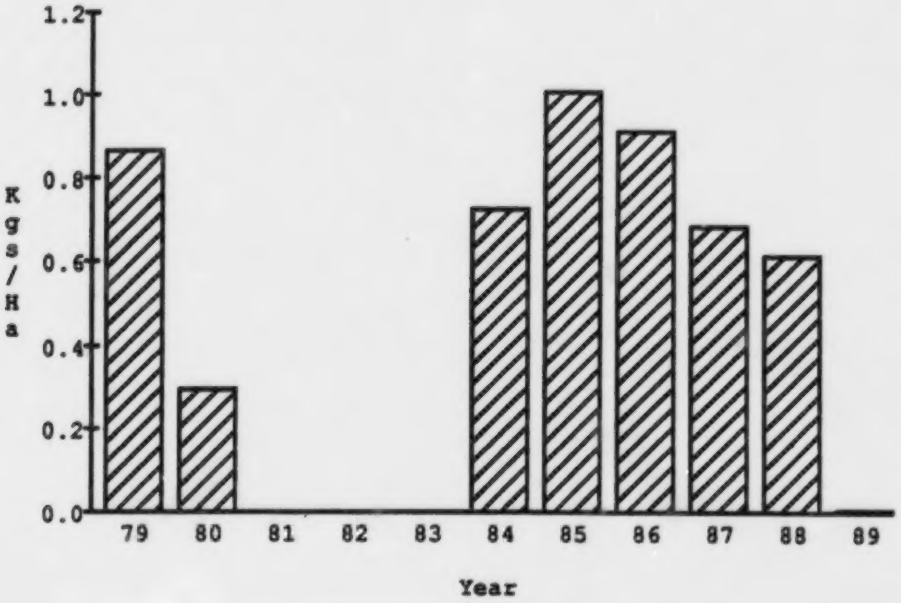


Figure 130. Yellow perch harvest and quota in kilograms for management area 5-2 (GB02), 1979 - 1989.

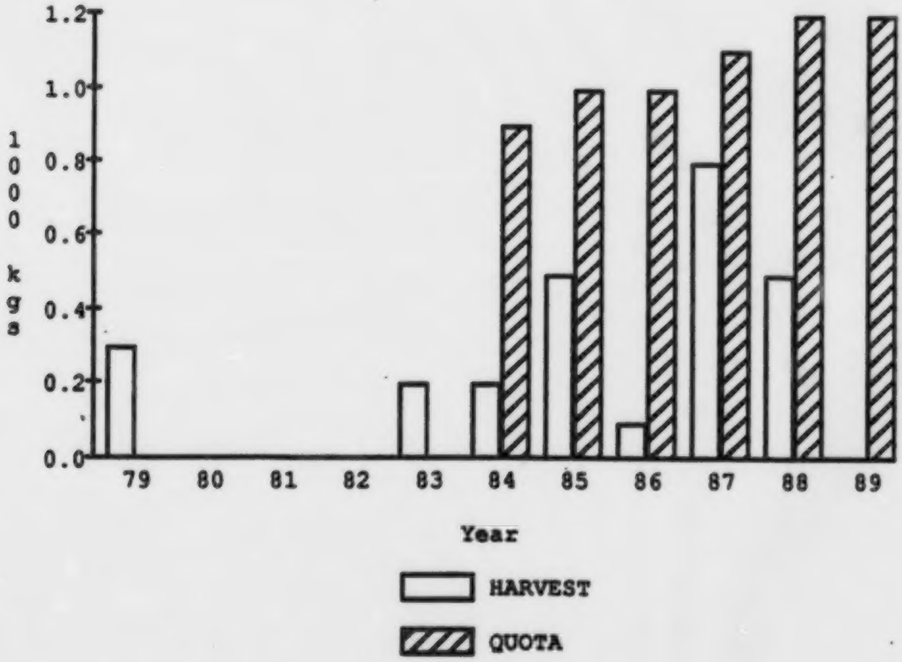


Figure 131. Annual gill net effort (km) for yellow perch in management area 5-2 (GB02), 1979 - 1989.

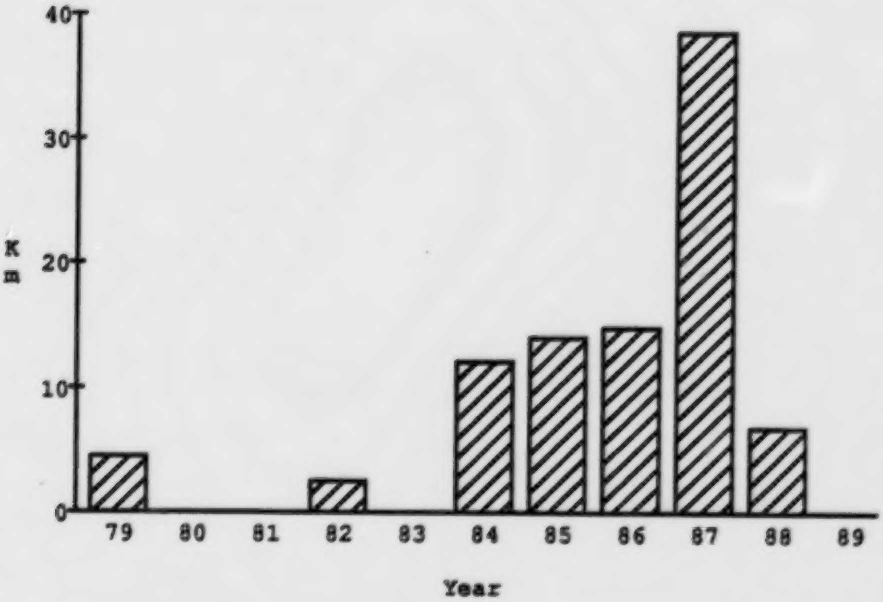


Figure 132. Yellow perch gill net CUEs (kgs/km) for management area 5-2 (GB02), 1979 - 1989.

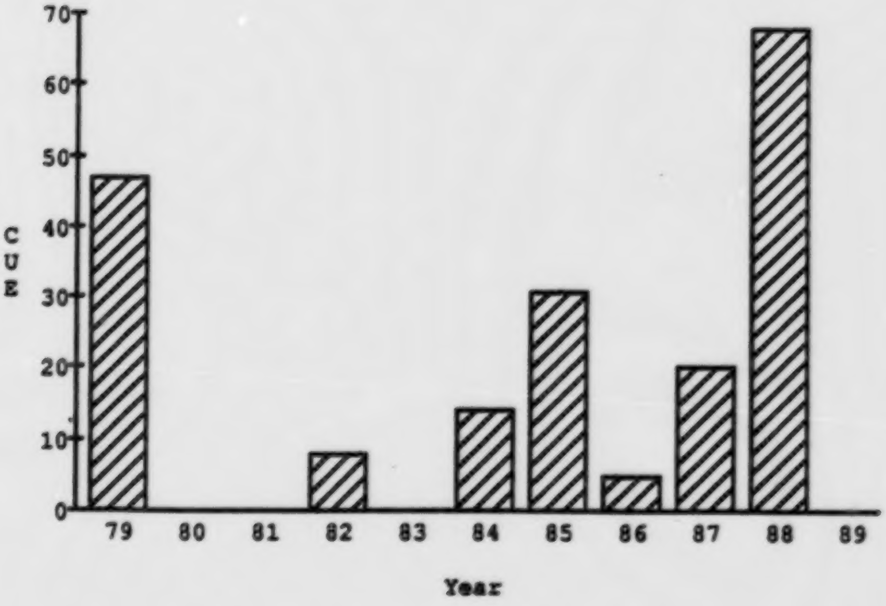


Figure 133. Walleye harvest and quota in kilograms for management area 5-2 (GB02), 1979 - 1989.

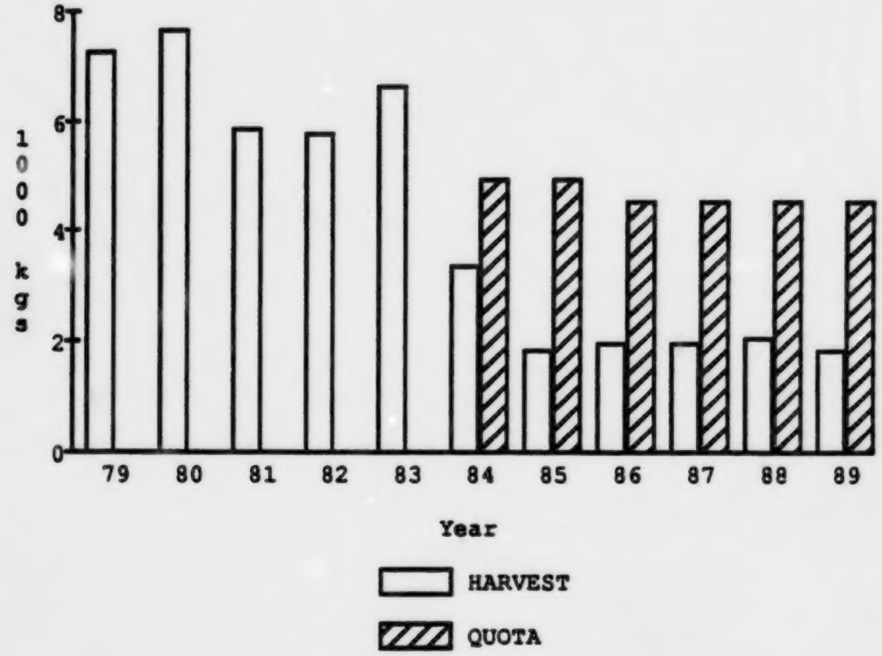
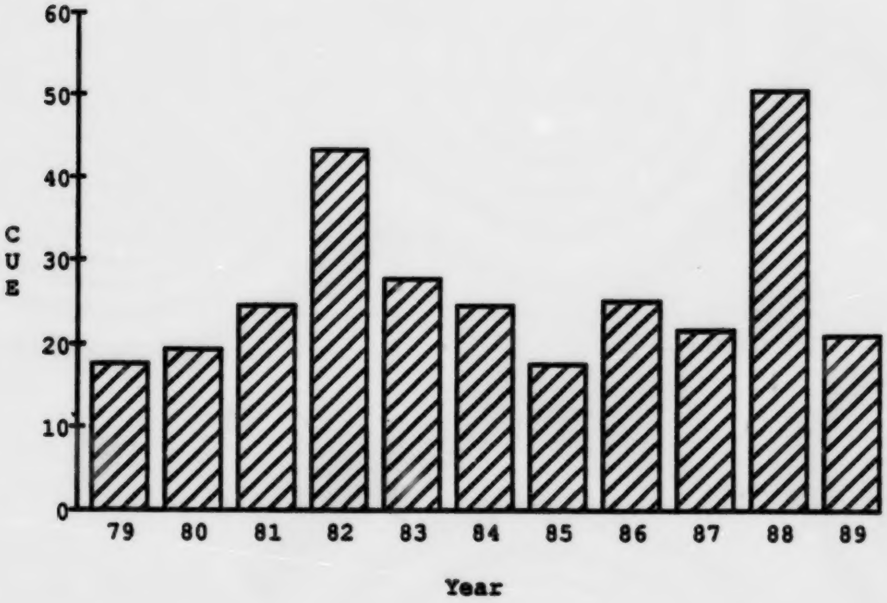


Figure 134. Walleye gill net CUEs (kgs/km) for management area 5-2 (GB02), 1979 - 1989.



MANAGEMENT AREA 5-3

Lake Whitefish

- Allocation dropped 9% to 36,508 kgs in 1989.
- The harvest level remained low at 8,988 kgs in 1989, reaching only 25% of the allocation (Fig. 135).
- GB03 and GB06 gill net fisheries accounted for 75% and 25% of the harvest, respectively (Figs. 136, 138). No change in the pattern of harvest from 1988.
- Gill net effort in GB03 dropped 79% to 39 kms in 1989 (Fig. 139).
- Gill net effort in GB06 stayed low at 20 kms in 1989 (Fig. 140).
- Gill net CUE in GB03 increased five-fold to 179 kgs/km in 1989 (Fig. 141).
- Gill net CUE in GB06 doubled to 82 kgs/km in 1989 (Fig. 142).
- Relatively low harvest and effort preclude using CUE as an indicator of abundance.
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Chub

- The allocation remained unchanged at 185,787 kgs in 1989.
- Harvest remained high at 149,738 kgs, nearly 81% of allocation (Fig. 143).
- GB04 gill net fisheries took only 6% of the harvest in 1989, down from 21% in 1988 (Fig. 145). GB03 and GB06 accounted for 44% and 50% of the harvest in 1989 (Figs. 144, 146), respectively.
- Effort dropped 67% to 110 kms in GB04, but only 15% to 666 kms and 12% to 998 kms in GB03 and GB06, respectively (Figs. 147, 148, 149).
- CUE rose by 45% to 100 kgs/km in GB03 and by 19% to 74 kgs/km in GB06, but declined slightly (8%) to 88 kgs/km in GB04 (Figs. 150, 151, 152).
- Abundance was therefore higher in the two principal fishing areas (GB03 and GB06) as predicted.
- Age 6 chub dominated the catch (59%) in 1989 in GB03 as predicted (Table 42).
- Yields were 0.69, 0.12 and 0.63 kgs/ha for GB03, GB04 and GB06, respectively (Figs 153, 154, 155) .
- Recruitment is expected to stay strong as the rest of the 1983 and 1984 year-classes enter the fishery in 1990.
- Recruitment is expected to drop in 1991 as weaker year-classes follow.

Yellow perch

- Allocation increased by 16% in 1989.
- Gill net harvest remains low with only 1.6% of the allocation taken in 1989 (Fig. 156).
- With a small allocation (4540 kg) and very little production in 1989 (71 kg) very little can be said.
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Table 40. Round weight (kgs) and value ($) by species for management area 5-3 (GB03, GB04, GB06), 1989.

SPECIES	HARVEST	VALUE
Lake trout	611	2057
Lake whitefish	8998	18419
Round whitefish	89	40
Chub	149738	266432
Suckers	861	0
Carp	19	13
Channel catfish	3	2
Burbot	1179	0
Rock bass	22	0
Yellow perch	71	10
Discarded (mixed)	0	0

Table 41. Round weight and quota in kilograms by species for management area 5-3 (GB03, GB04, GB06), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	8998	36508	24.6
Chub	149738	185787	80.6
Yellow perch	71	4554	1.6
Lake trout/backross	611	2820	21.7
Northern pike	0	446	0.0
Pink salmon	0	998	0.0
Channel catfish	3	999999	0.0

Figure 135. Lake whitefish harvest and quota in kilograms for management area 5-3 (GB03, GB04, GB06), 1979 - 1989.

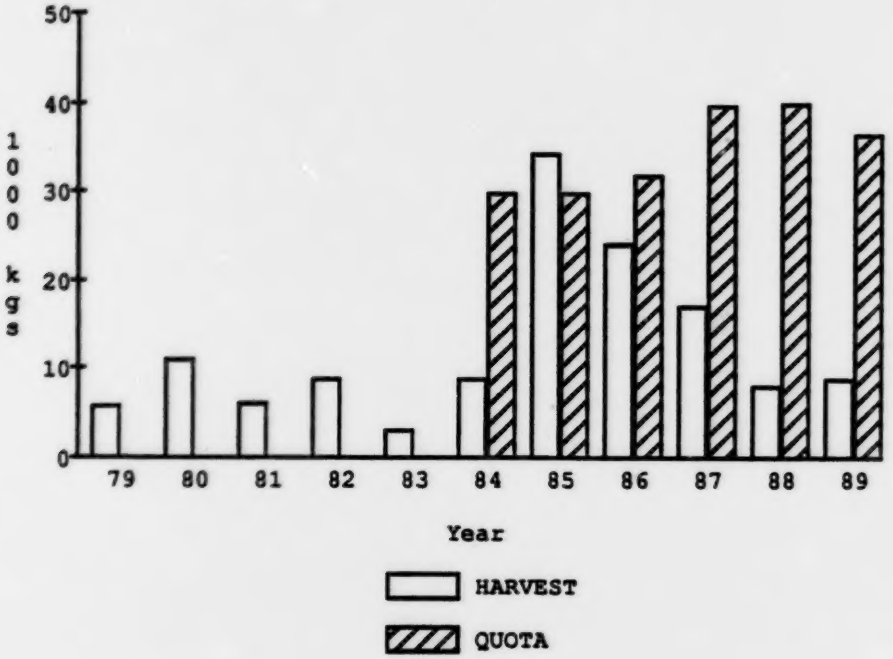


Figure 136. Lake whitefish harvest in kilograms for assessment area GB03 (subarea of management area 5-3), 1979 - 1989.

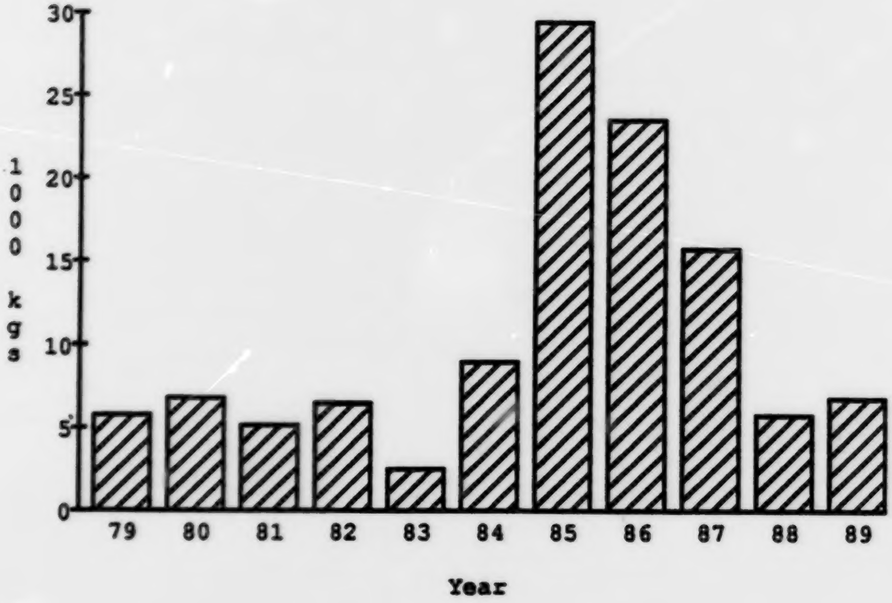


Figure 137. Lake whitefish harvest in kilograms for assessment area GB04 (subarea of management area 5-3), 1979 - 1989.

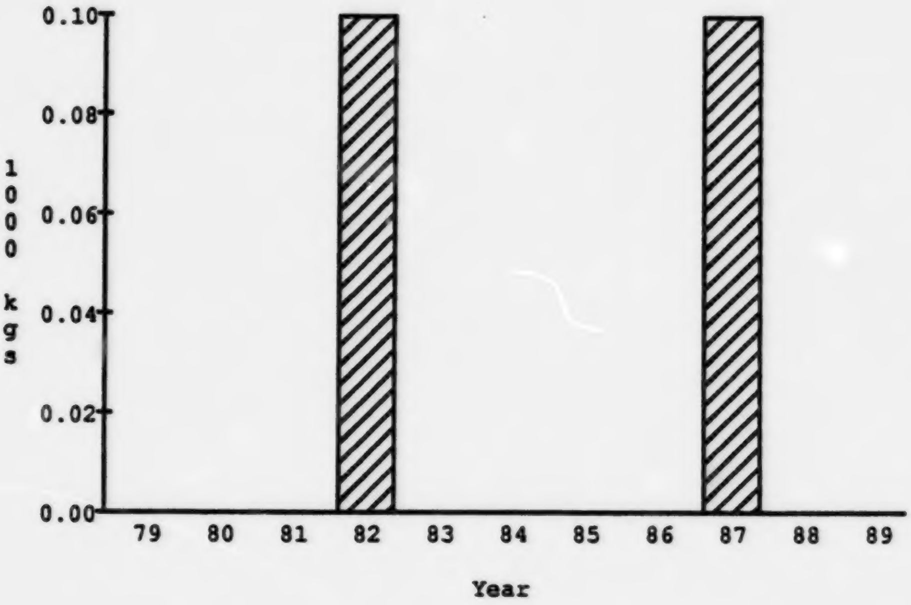


Figure 138. Lake whitefish harvest in kilograms for assessment area GB06 (subarea of management area 5-3), 1979 - 1989.

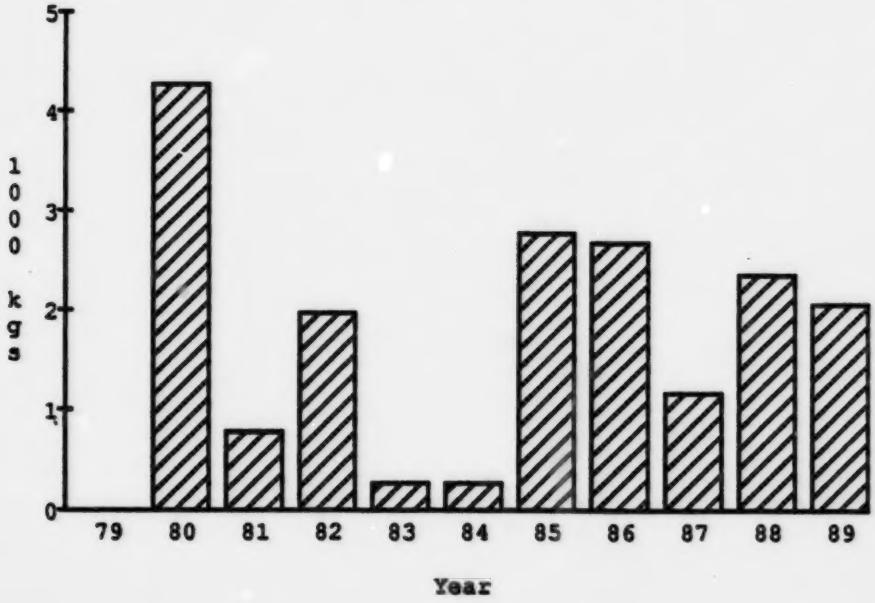


Figure 139. Annual gill net effort (km) for lake whitefish in assessment area GB03 (subarea of management area 5-3), 1979 - 1989.

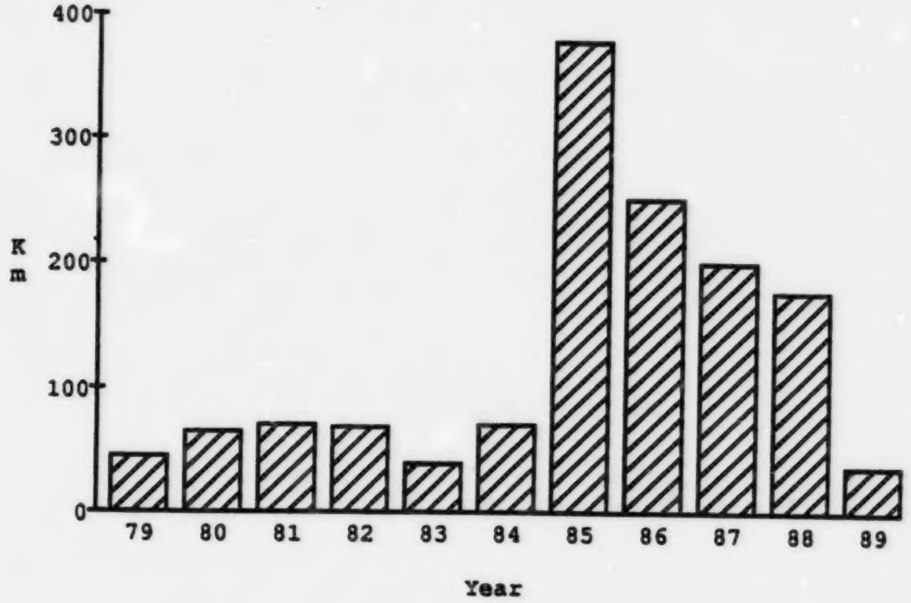


Figure 140. Annual gill net effort (km) for lake whitefish in assessment area GB06 (subarea of management area 5-3), 1979 - 1989.

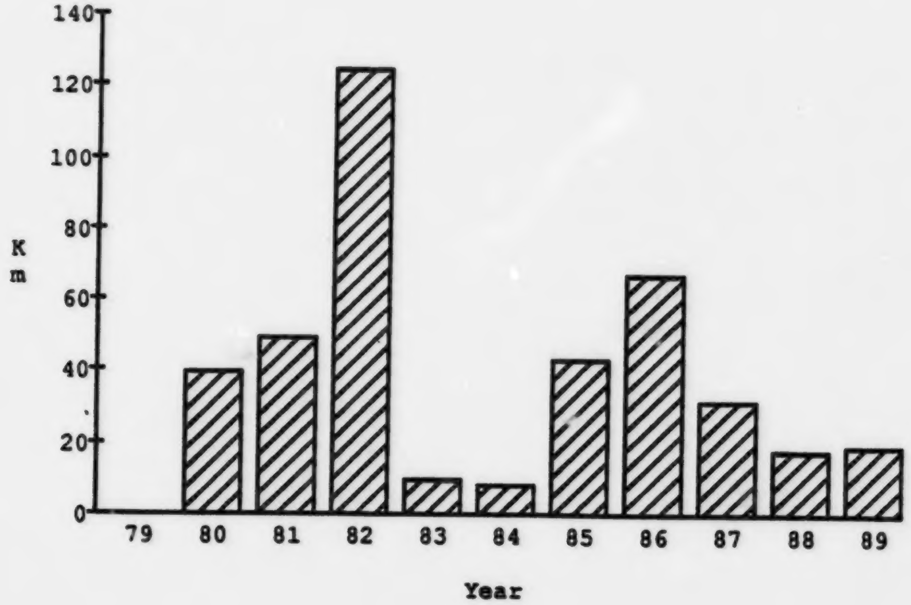


Figure 141. Lake whitefish gill net CUEs (kgs/km) for assessment area GB03 (subarea of management area 5-3), 1979 - 1989.

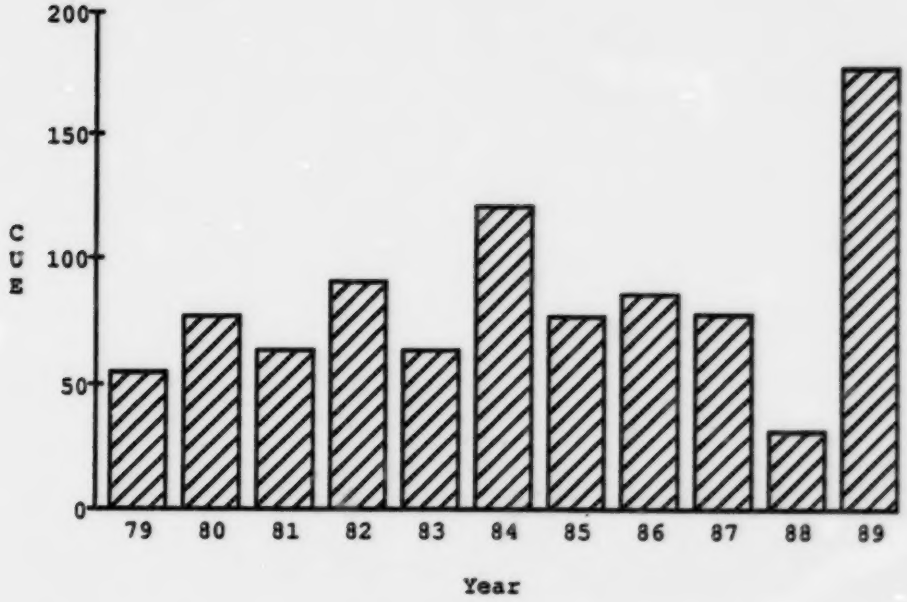


Figure 142. Lake whitefish gill net CUEs (kgs/km) for assessment area GB06 (subarea of management area 5-3), 1979 - 1989.

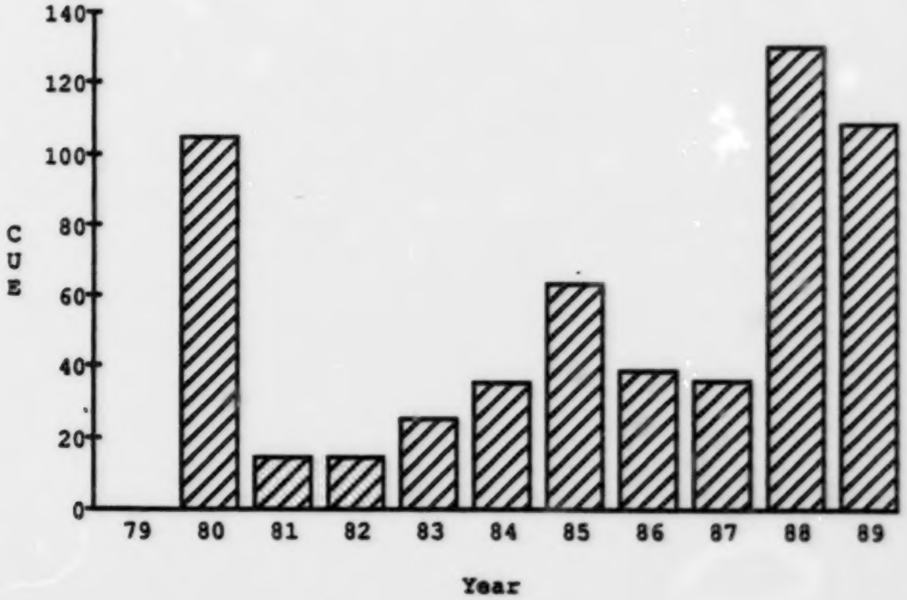


Figure 143. Chub harvest and quota in kilograms for management area 5-3 (GB03, GB04, GB06), 1979 - 1989.

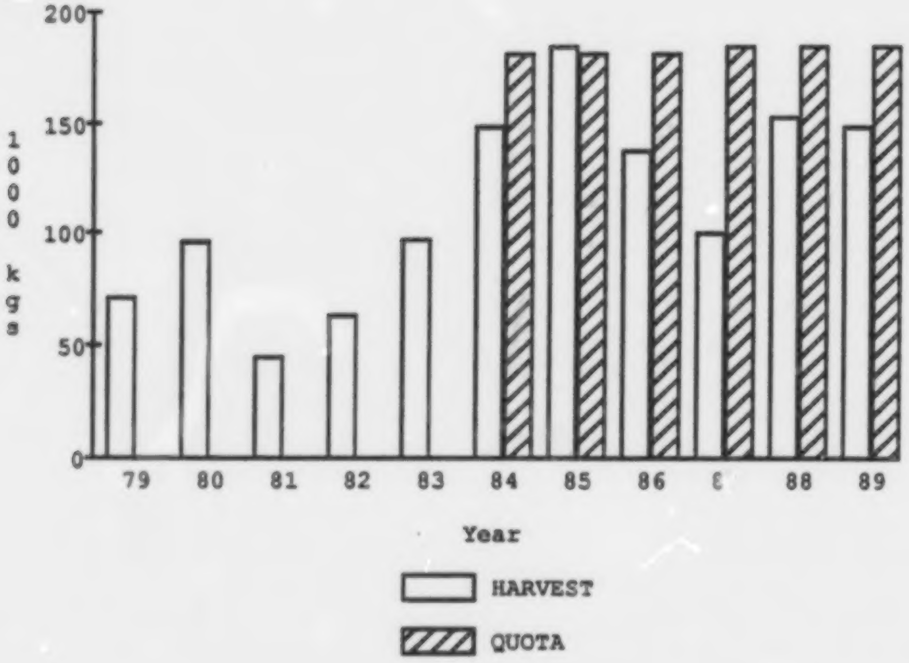


Figure 144. Chub harvest in kilograms for assessment area GB03 (subarea of management area 5-3), 1979 - 1989.

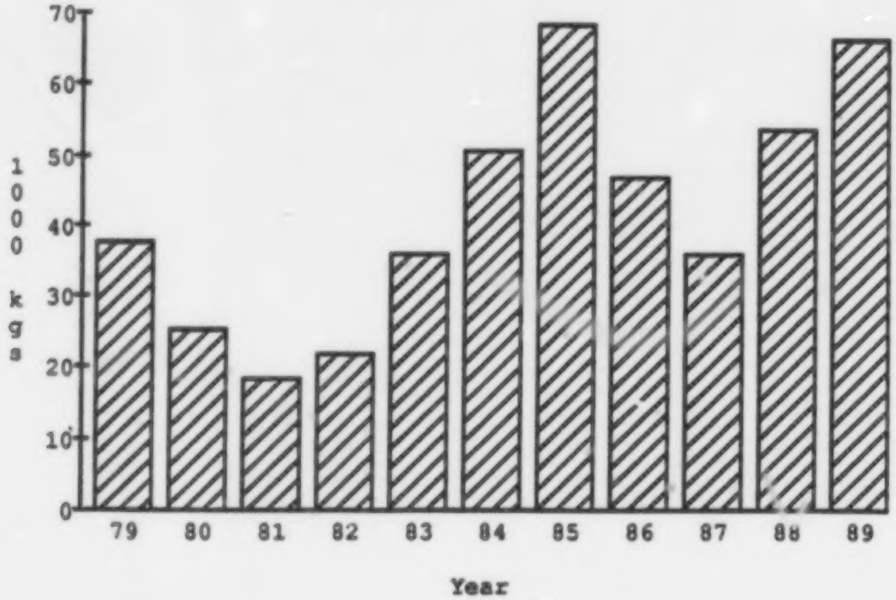


Figure 145. Chub harvest in kilograms for assessment area GB04 (subarea of management area 5-3), 1979 - 1989.

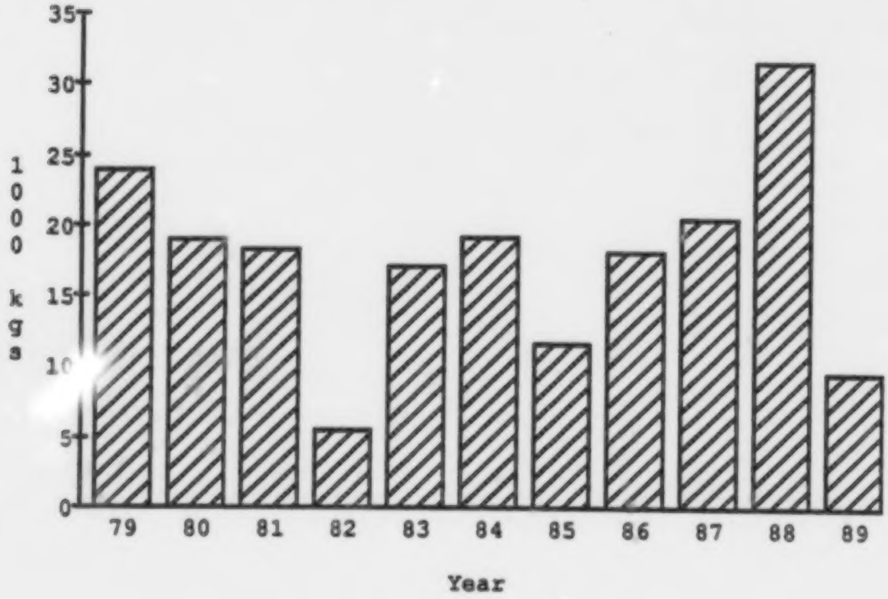


Figure 146. Chub harvest in kilograms for assessment area GB06 (subarea of management area 5-3), 1979 - 1989.

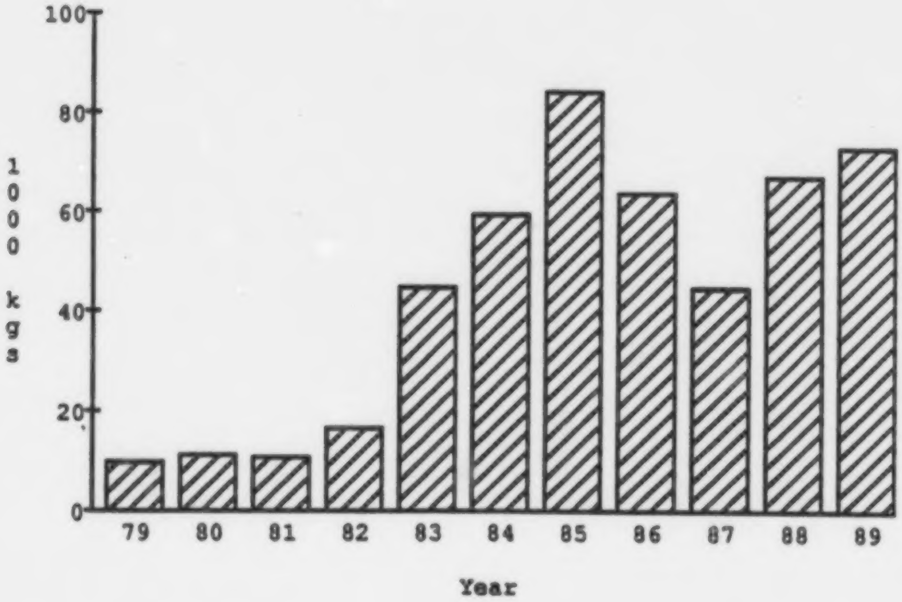


Figure 147. Annual gill net effort (km) for chub in assessment area GB03 (subarea of management area 5-3), 1979 - 1989.

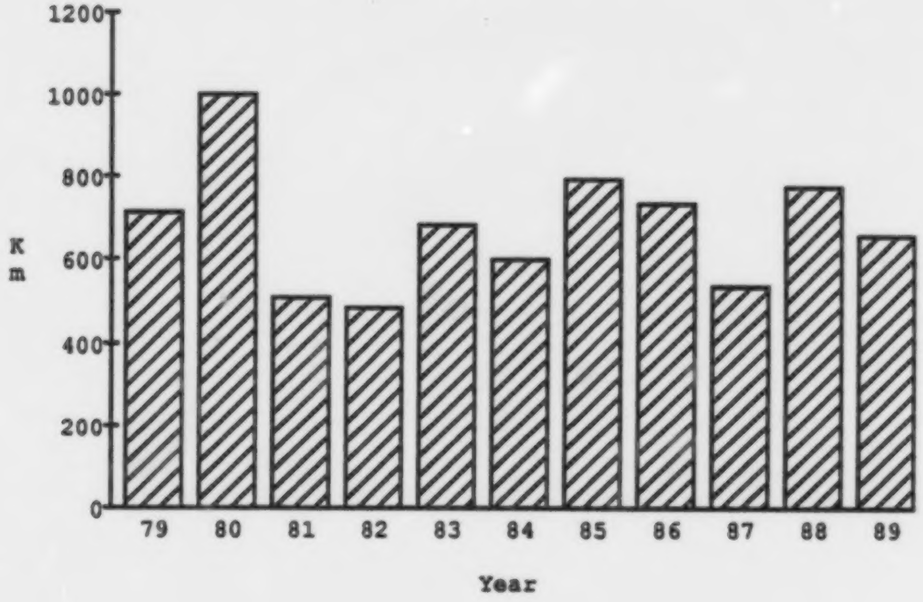


Figure 148. Annual gill net effort (km) for chub in assessment area GB04 (subarea of management area 5-3), 1979 - 1989.

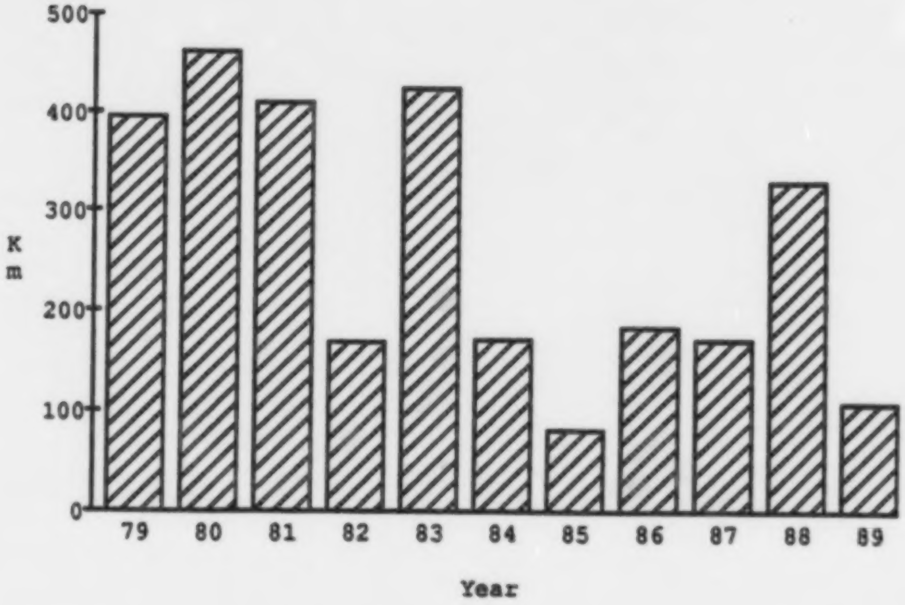


Figure 149. Annual gill net effort (km) for chub in assessment area GB06 (subarea of management area 5-3), 1979 - 1989.

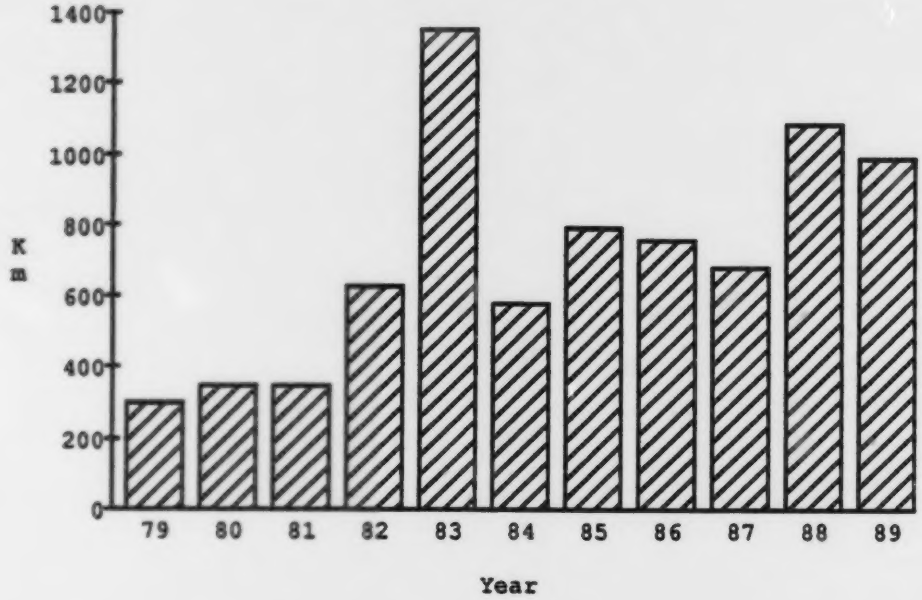


Figure 150. Chub gill net CUEs (kgs/km) for assessment area GB03 (subarea of management area 5-3), 1979 - 1989.

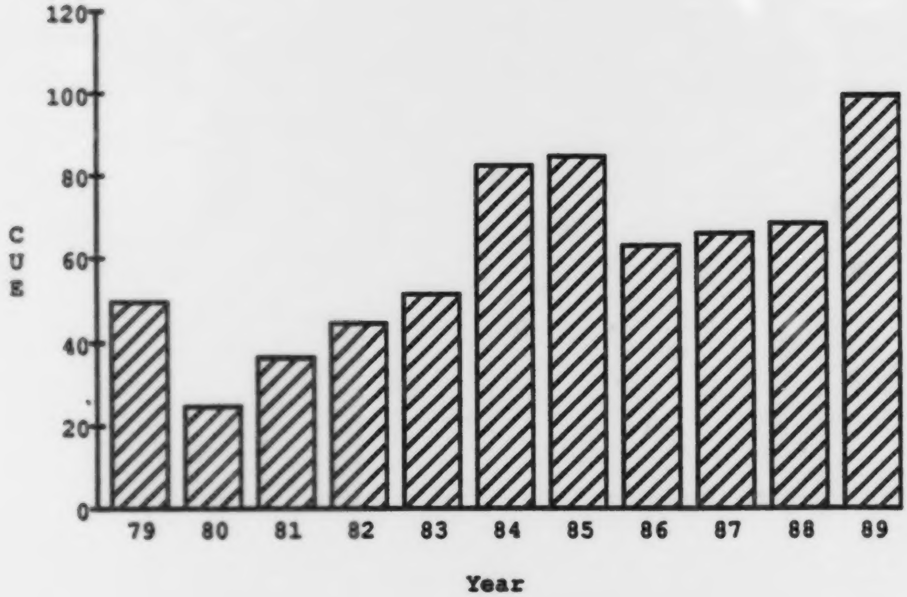


Figure 151. Chub gill net CUEs (kgs/km) for assessment area GB04 (subarea of management area 5-3), 1979 - 1989.

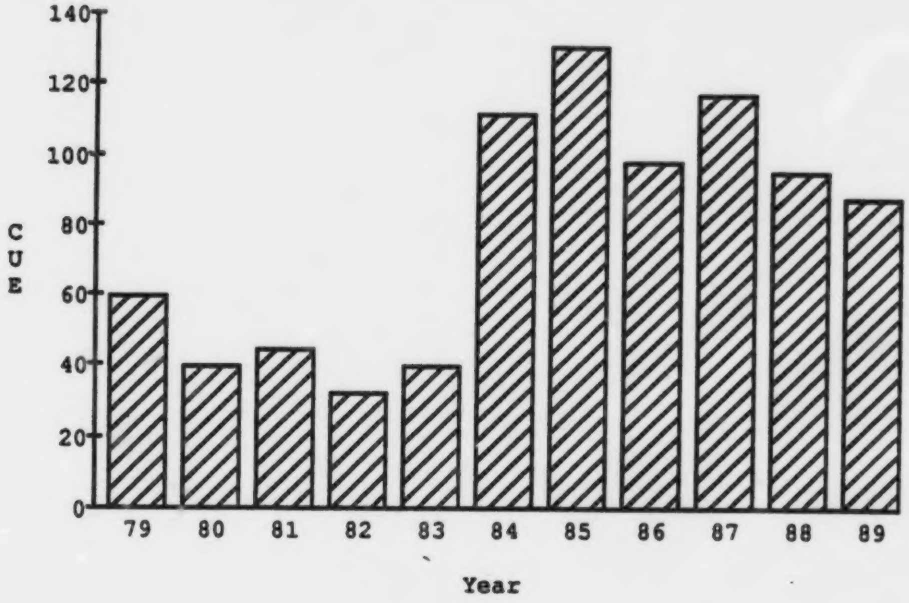


Figure 152. Chub gill net CUEs (kgs/km) for assessment area GB06 (subarea of management area 5-3), 1979 - 1989.

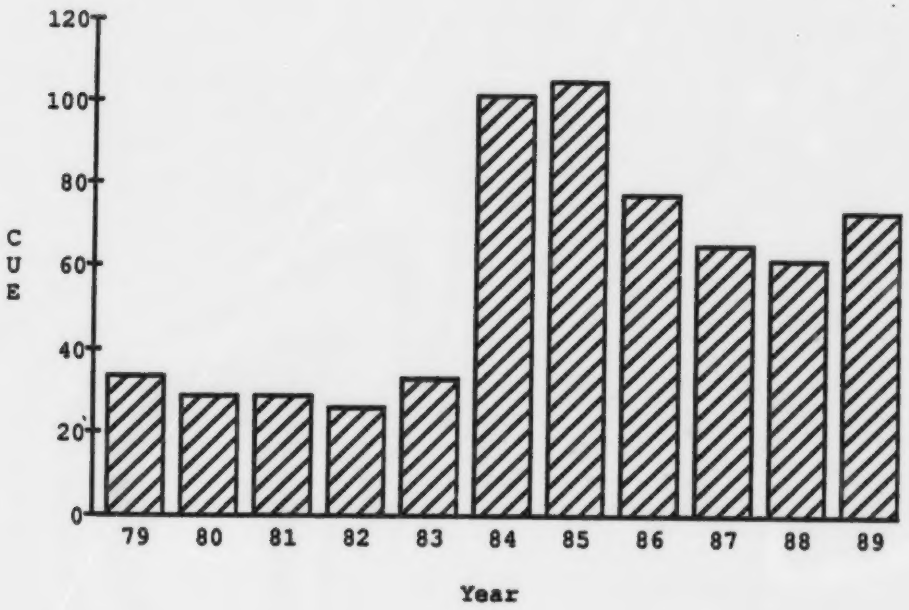


Figure 153. Chub yield (kgs/ha) for assessment area GB03 (subarea of management area 5-3), 1979 - 1989.

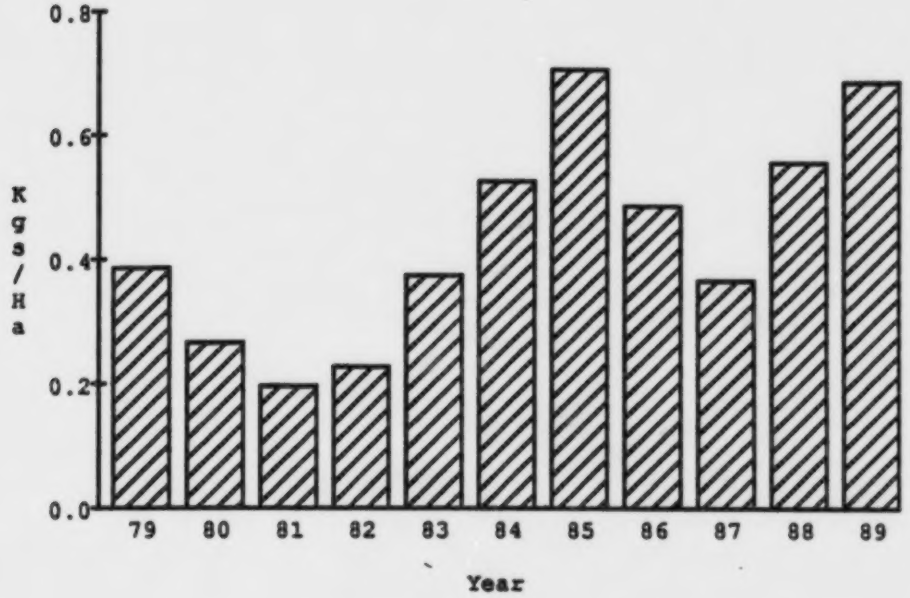


Figure 154. Chub yield (kgs/ha) for assessment area GB04 (subarea of management area 5-3), 1979 - 1989.

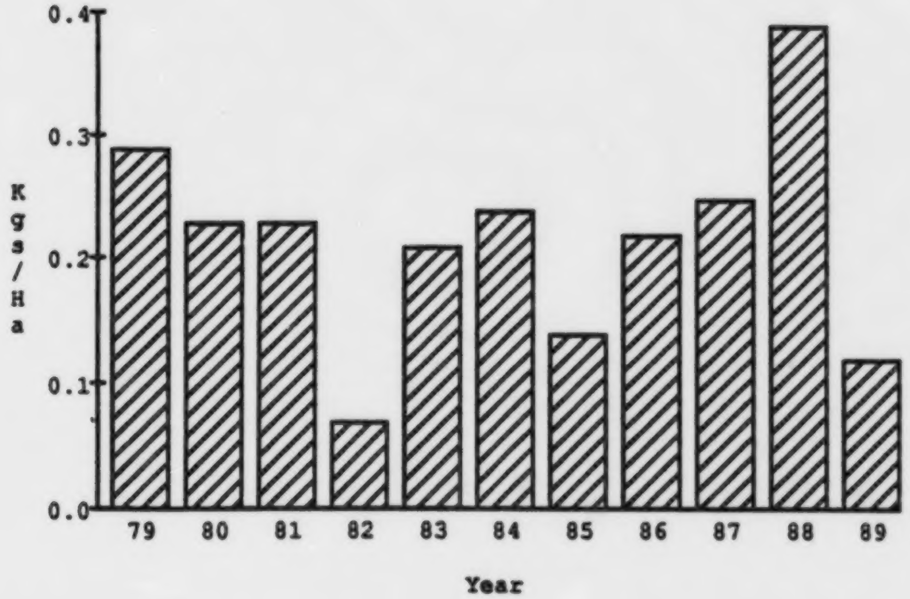


Figure 155. Chub yield (kgs/ha) for assessment area GB06 (subarea of management area 5-3), 1979 - 1989.

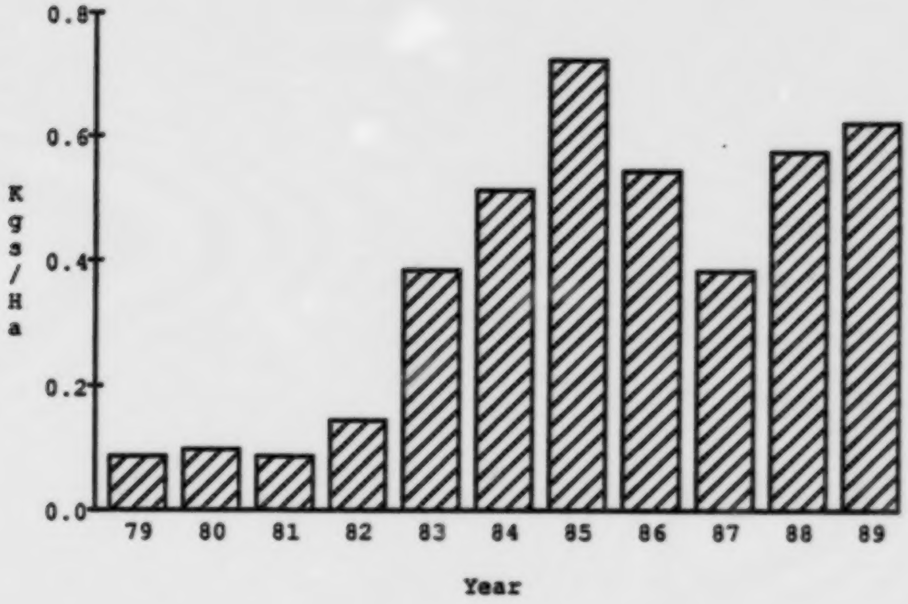


Table 42. Age-class composition of chub caught in gill nets in assessment area GB03 (subarea of management area 5-3), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0		0	0	0	0	0	0
2	1158	0	3226	0		0	0	0	854	0	0
3	15370	8484	38353	6554		4982	392	3758	0	0	0
4	22493	57010	36784	59413		67691	28634	4443	10127	18685	1465
5	30215	19725	47299	28949		83916	96600	84131	32982	109964	61319
6	51925	17282	3075	22809		49807	122345	90723	88628	65207	176511
7	21577	14686	4465	4670		18029	51514	21242	32568	59378	42263
8	13718	2802	2606	1369		5292	14704	13641	4708	15705	13008
9	6775	2469	755	228		1708	3468	917	1097	2776	2486
10	4505	925	755	0		1146	221	1124	0	219	0
11	3339	0	1716	0		0	221	917	0	0	628
12	2418	617	0	492		0	0	0	514	0	0
13	1511	309	0	0		0	0	0	0	0	0
>13	306	309	0	0		0	0	0	0	0	0

Figure 156. Yellow perch harvest and quota in kilograms for management area 5-3 (GB03, GB04, GB06), 1979 - 1989.

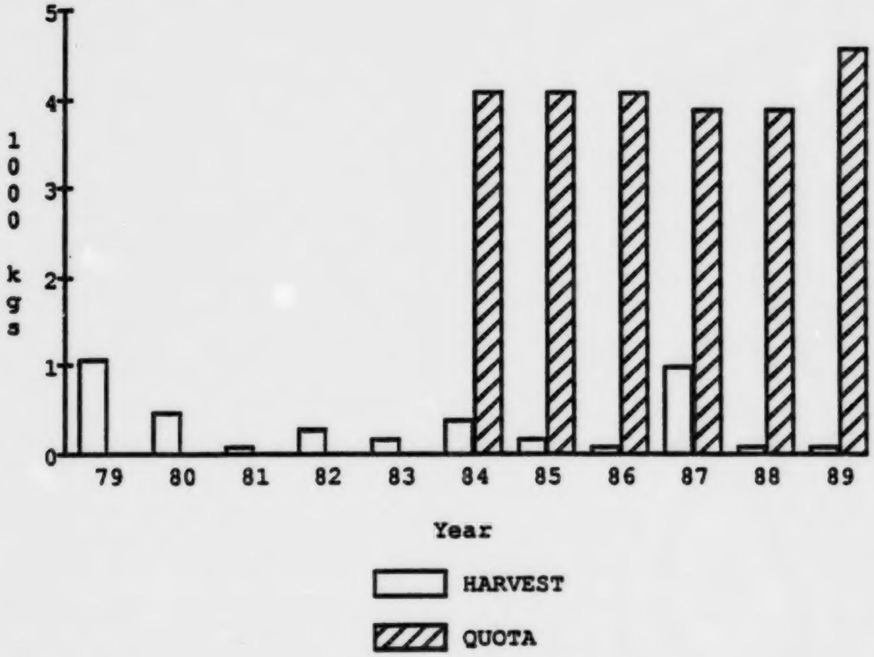
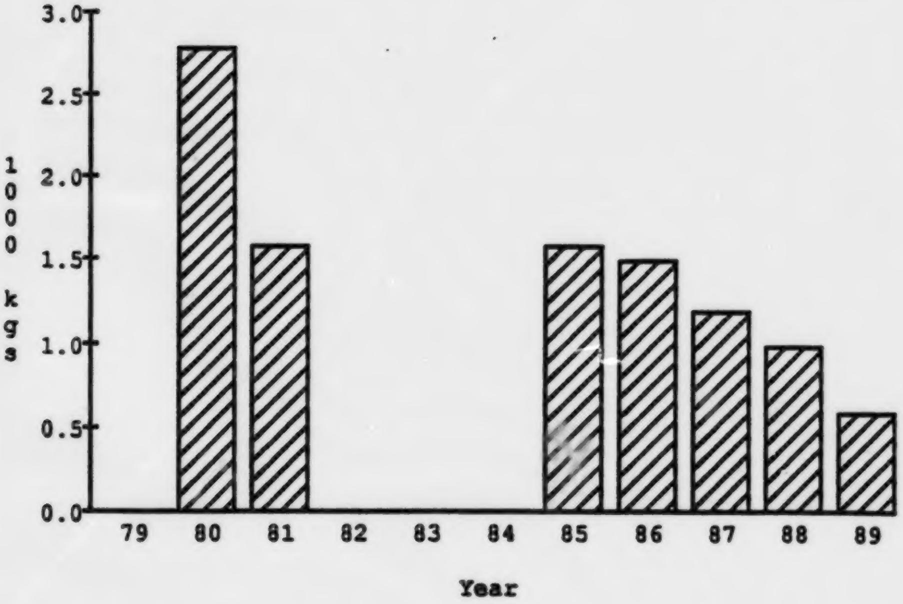


Figure 157. Lake trout/backcross harvest in kilograms for assessment area GB06 (subarea of management area 5-3), 1979 - 1989.



MANAGEMENT AREA 5-4

Lake Whitefish

- Allocation remained unchanged at 7,220 kgs in 1989.
- Harvest rose 130% to 2,997 kgs in 1989, approximately 42% of the allocation (Fig. 158).
- Effort increased 21% to 36 kms in 1989 (Fig. 159).
- CUE was up 91% in 1989 (Fig. 160).
- Relatively low levels of effort and catch mean CUE data may not be a reliable indicator of abundance.
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Chub

- Allocation remained unchanged at 18,000 kgs in 1989.
- The harvest dropped from 9,368 to 779 kgs, only 4% of the 1989 allocation (Fig. 161).
- Effort was virtually nil, down 97% from 1988 (Fig. 162).
- CUE rose from 55.4 to 139.1 kgs/km in 1989 (Fig. 163).
- Abundance not reflected by CUE due to minimal effort.
- Yield dropped to 0.02 kgs/ha (Fig. 164).
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Yellow perch

- Allocation remained unchanged at 5,706 kgs in 1989.
- Harvest dropped to 682 kgs , down from 70% from 1988. Only 12% of the allocation taken (Fig. 165).
- Effort down to 15 km (58%) in 1989 (Fig. 166).
- CUE down 29% to 46 kgs/km from 1988 (Fig. 167).
- Relatively low levels of effort and catch mean CUE may not be a reliable indicator of abundance.
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Table 43. Round weight (kgs) and value ($) by species for management area 5-4 (GB05), 1989.

SPECIES	HARVEST	VALUE
Lake whitefish	2997	4410
Lake herring	135	59
Round whitefish	171	189
Chub	779	897
Suckers	49	0
Carp	2	0
Channel catfish	1	0
Burbot	52	0
Yellow perch	682	2773
Walleye	63	280
Discarded (mixed)	0	0

Table 44. Round weight and quota in kilograms by species for management area 5-4 (GB05), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	2997	7220	41.5
Chub	779	18000	4.3
Yellow perch	682	5706	12.0
Walleye	63	159	39.6
Pink salmon	0	360	0.0
Channel catfish	1	999999	0.0

Figure 158. Lake whitefish harvest and quota in kilograms for management area 5-4 (GB05), 1979 - 1989.

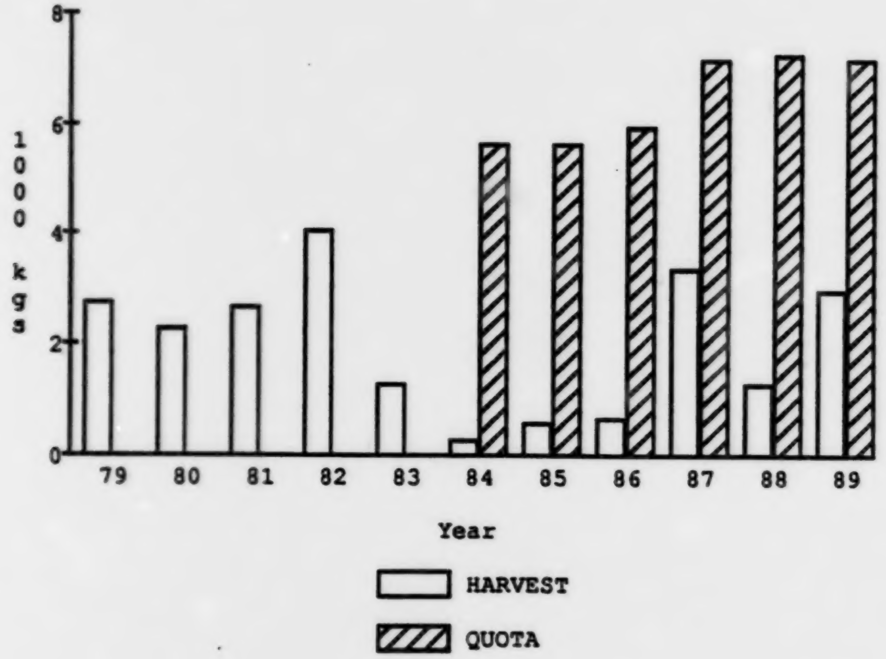


Figure 159. Annual gill net effort (km) for lake whitefish in management area 5-4 (GB05), 1979 - 1989.

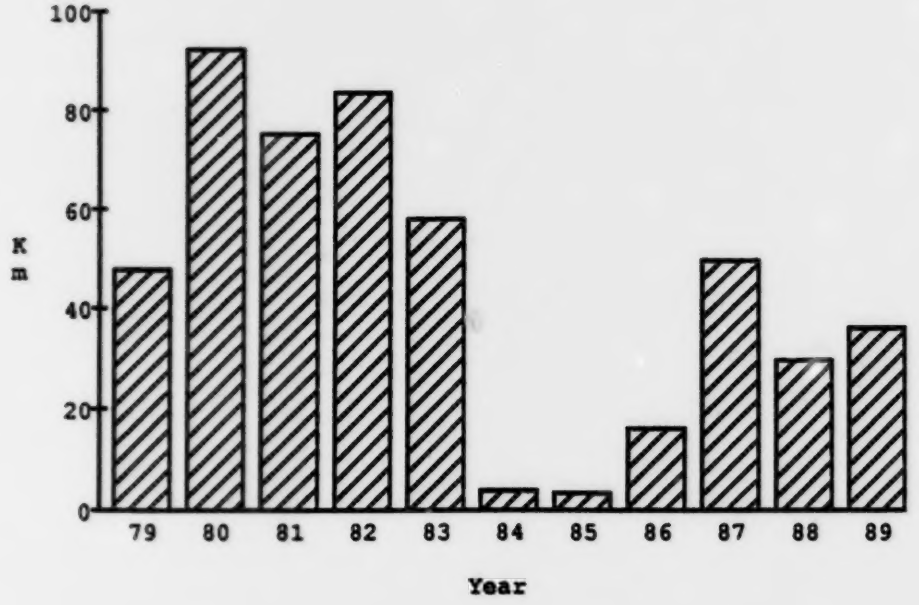


Figure 160. Lake whitefish gill net CUEs (kgs/km) for management area 5-4 (GB05), 1979 - 1989.

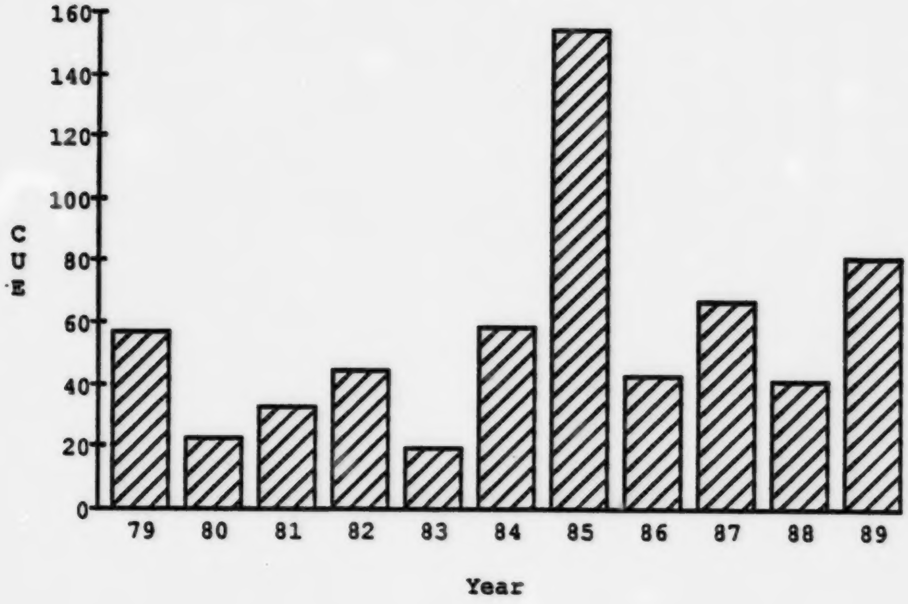


Figure 161. Chub harvest and quota in kilograms for management area 5-4 (GB05), 1979 - 1989.

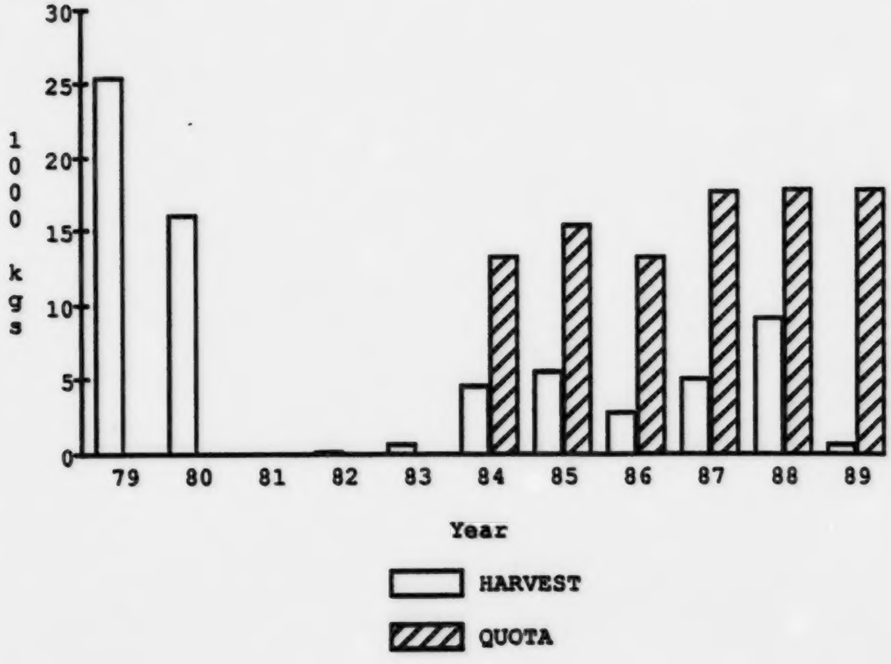


Figure 162. Annual gill net effort (km) for chub in management area 5-4 (GB05), 1979 - 1989.

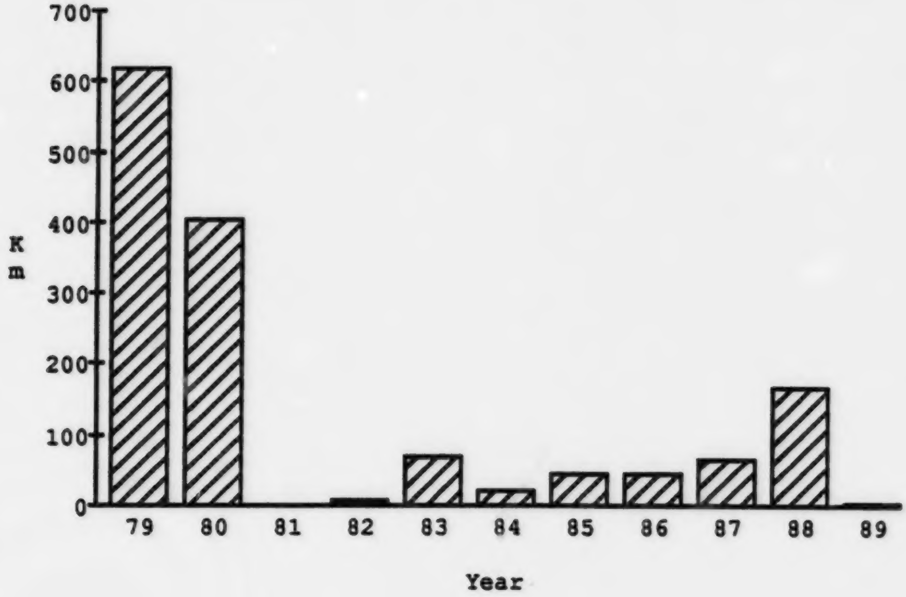


Figure 163. Chub gill net CUEs (kgs/km) for management area 5-4 (GB05), 1979 - 1989.

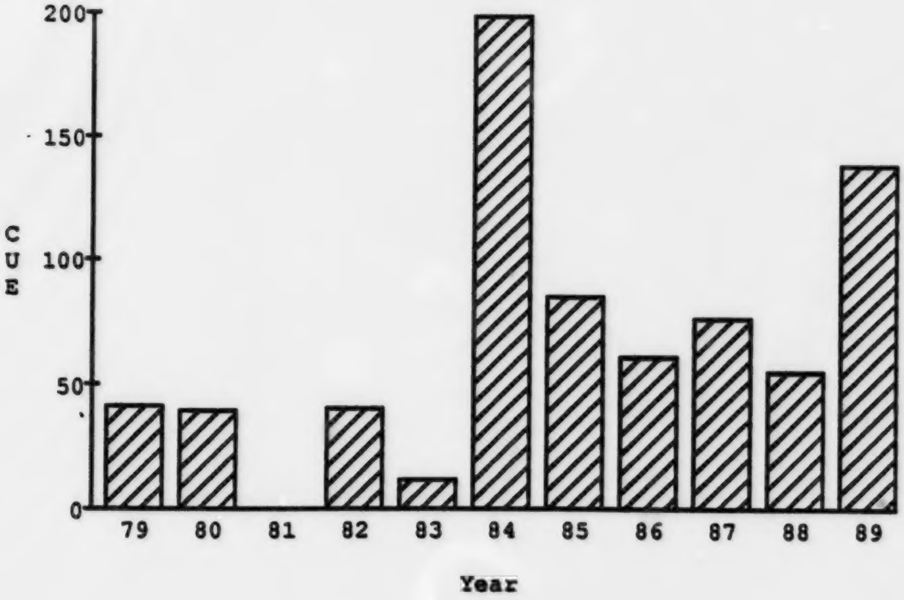


Figure 164. Chub yield (kgs/ha) for management area 5-4 (GB05), 1979 - 1989.

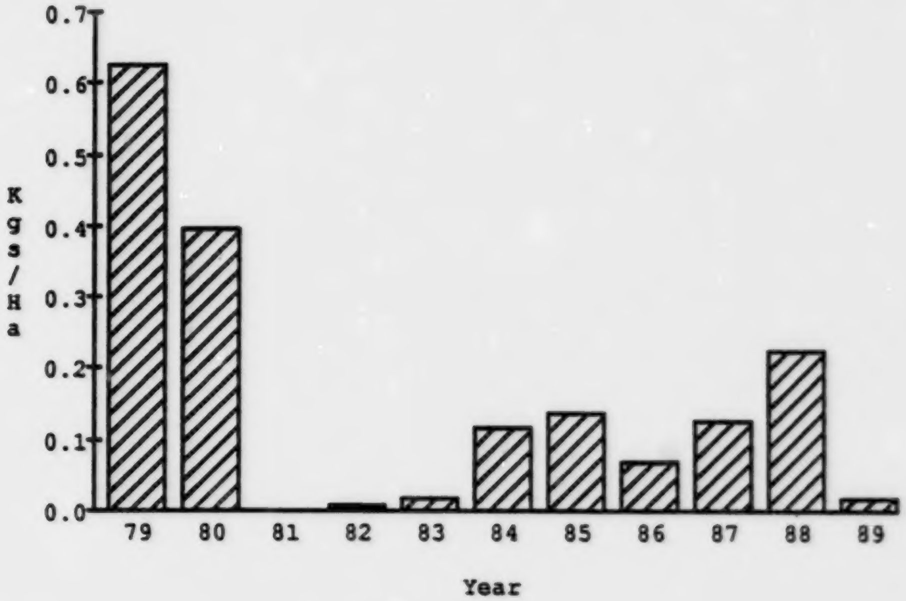


Figure 165. Yellow perch harvest and quota in kilograms for management area 5-4 (GB05), 1979 - 1989.

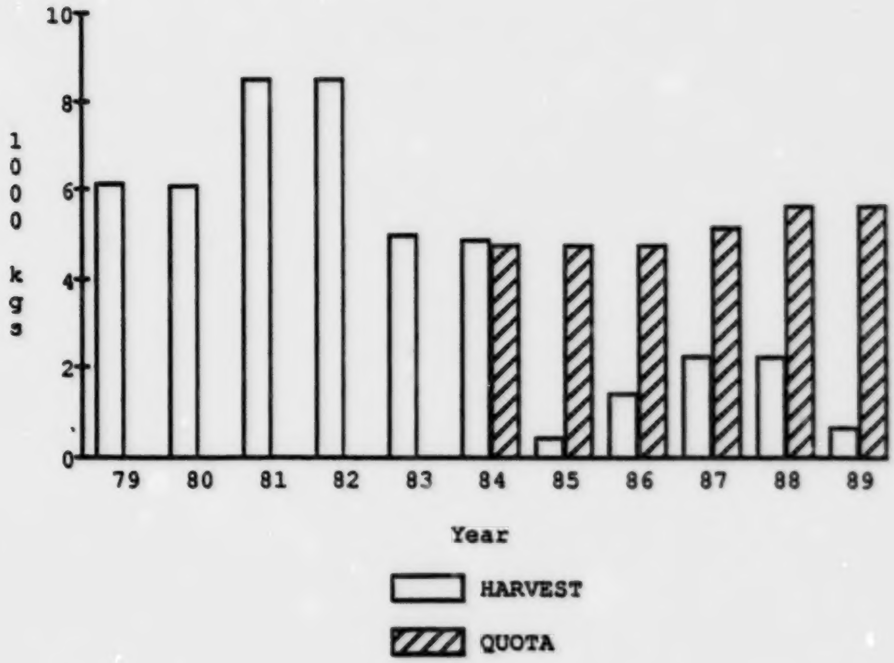


Figure 166. Annual gill net effort (km) for yellow perch in management area 5-4 (GB05), 1979 - 1989.

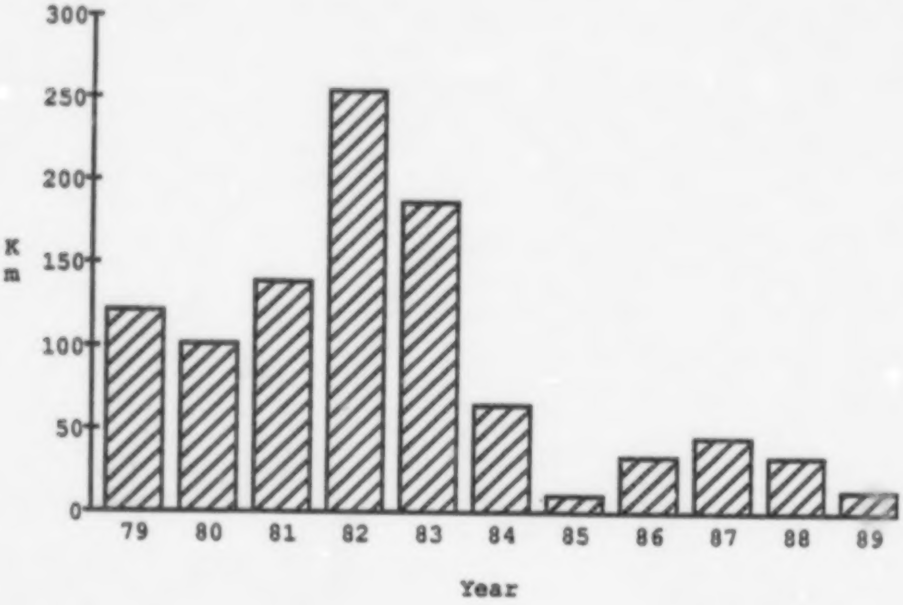
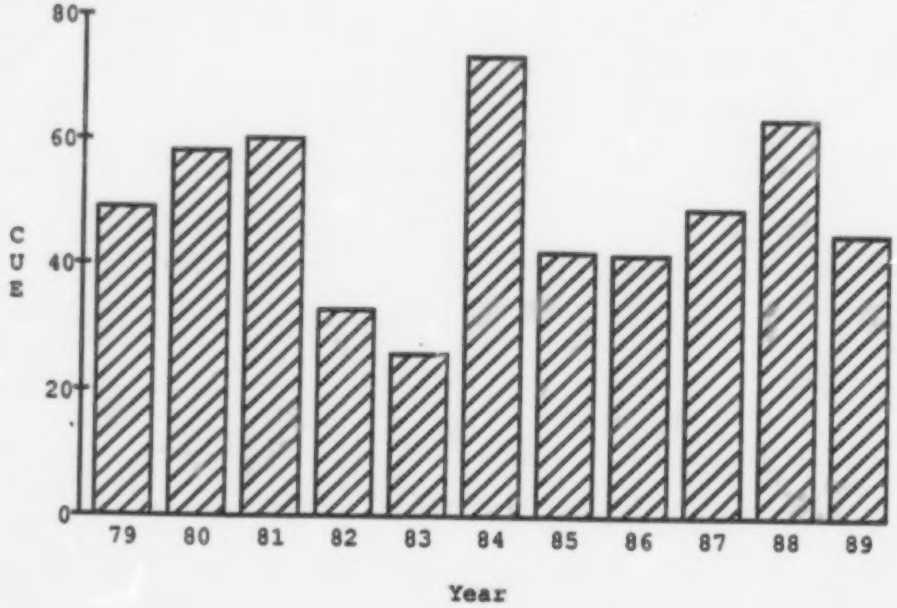


Figure 167. Yellow perch gill net CUEs (kgs/km) for management area 5-4 (GB05), 1979 - 1989.



MANAGEMENT AREA 5-5

Lake Whitefish

- Allocation dropped 7% to 11,766 kgs in 1989.
- Harvest remained constant at 3,900 kgs, 33% of the allocation in 1989 (Fig. 168).
- Effort dipped slightly (8%) to 51 kms in 1989 (Fig. 169).
- CUE dropped 49% to 37 kgs/km in 1989 (Fig. 170).
- Abundance continued to drop in 1989.
- No pre-recruit information.
- No prediction concerning future abundance in 1990 or 1991.

Chub

- The 1989 allocation remained at 31,488 kgs.
- Harvest dropped slightly to 23,767 kgs, 76% of the 1989 allocation (Fig. 171).
- Effort dropped substantially (37%) to 252 kms in 1989 (Fig. 172).
- CUE increased 45% to 94 kgs/km in 1989 (Fig. 173).
- Yield dropped slightly to 0.25 kgs/ha in 1989 (Fig. 174).
- Recruitment of the strong 1983 and good 1984 year-classes probably accounted for the increase in abundance in 1989.
- Recruitment is expected to stay at the same level in 1990 as these year-classes continue to recruit. Abundance should remain at the 1989 level.
- Recruitment is expected to drop in 1991 as weaker year-classes follow. Abundance should begin to drop.

Yellow perch

- Allocation remained at 13,182 kgs in 1989.
- Harvest dropped from 12,035 to 4,480 kgs in 1989, 37% of the allocation (Fig. 175).
- Effort dropped 50% to 90 kms in 1989 (Fig. 176).
- CUE dropped slightly (19%) to 54 kgs/km in 1989 (Fig. 177).
- Abundance has been relatively stable over the period 1986 to 1989.
- No recruitment information
- No reason to assume abundance will change substantially in 1990.

Table 45. Round weight (kgs) and value ($) by species for management area 5-5 (GB07), 1989.

SPECIES	HARVEST	VALUE
Lake whitefish	3900	7085
Lake herring	89	129
Round whitefish	442	424
Chub	23767	40981
Yellow perch	4840	18166
Discarded (mixed)	0	0

Table 46. Round weight and quota in kilograms by species for management area 5-5 (GB07), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	3900	11766	33.1
Chub	23767	31488	75.5
Yellow perch	4840	13182	36.7
Pink salmon	0	272	0.0

Figure 168. Lake whitefish harvest and quota in kilograms for management area 5-5 (GB07), 1979 - 1989.

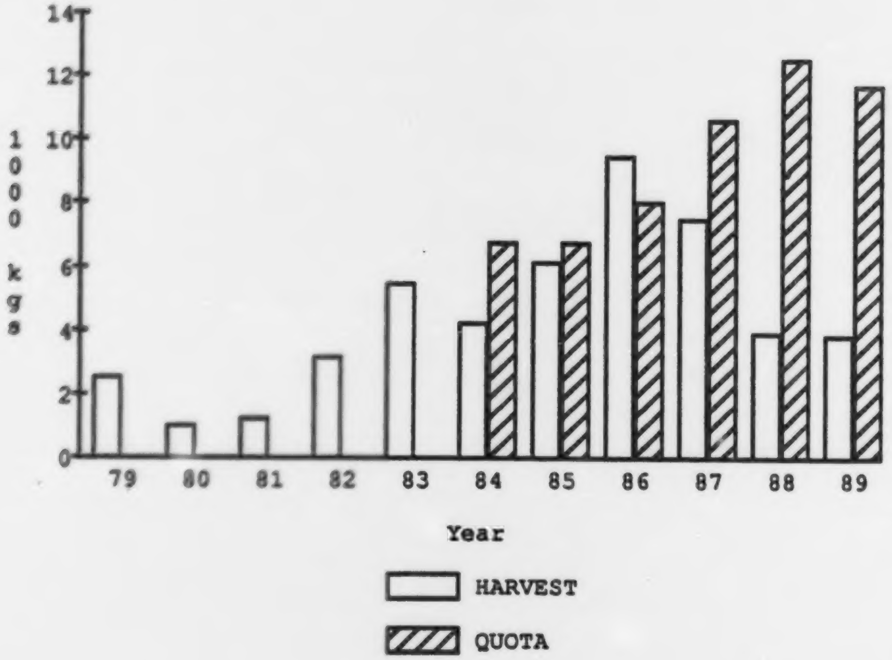


Figure 169. Annual gill net effort (km) for lake whitefish in management area 5-5 (GB07), 1979 - 1989.

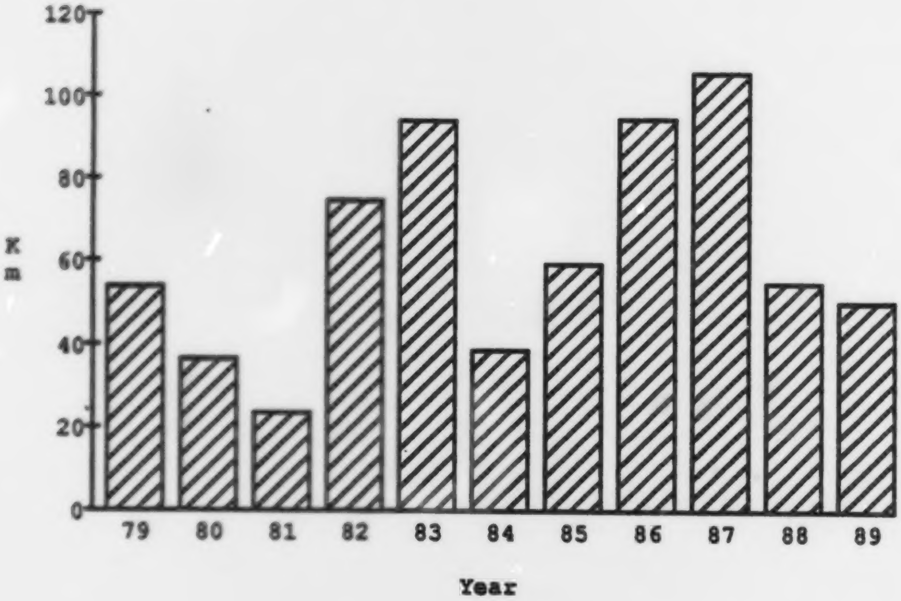


Figure 170. Lake whitefish gill net CUEs (kgs/km) for management area 5-5 (GB07), 1979 - 1989.

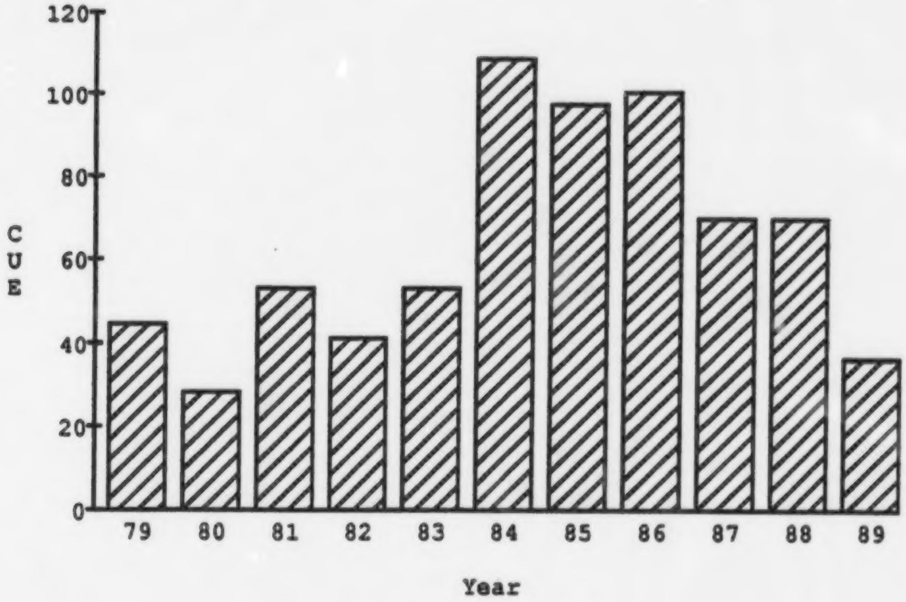


Figure 171. Chub harvest and quota in kilograms for management area 5-5 (GB07), 1979 - 1989.

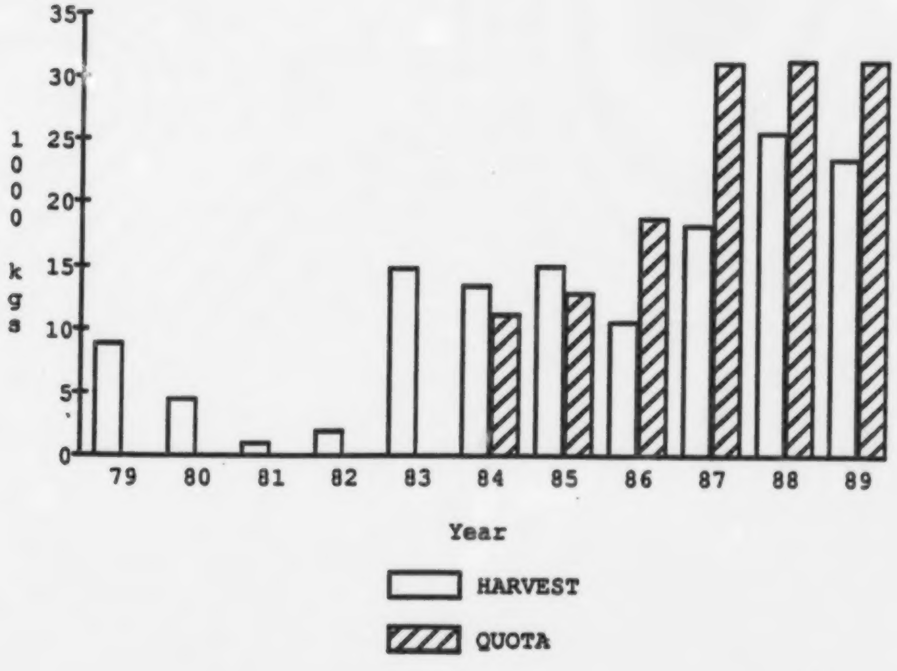


Figure 172. Annual gill net effort (km) for chub in management area 5-5 (GB07), 1979 - 1989.

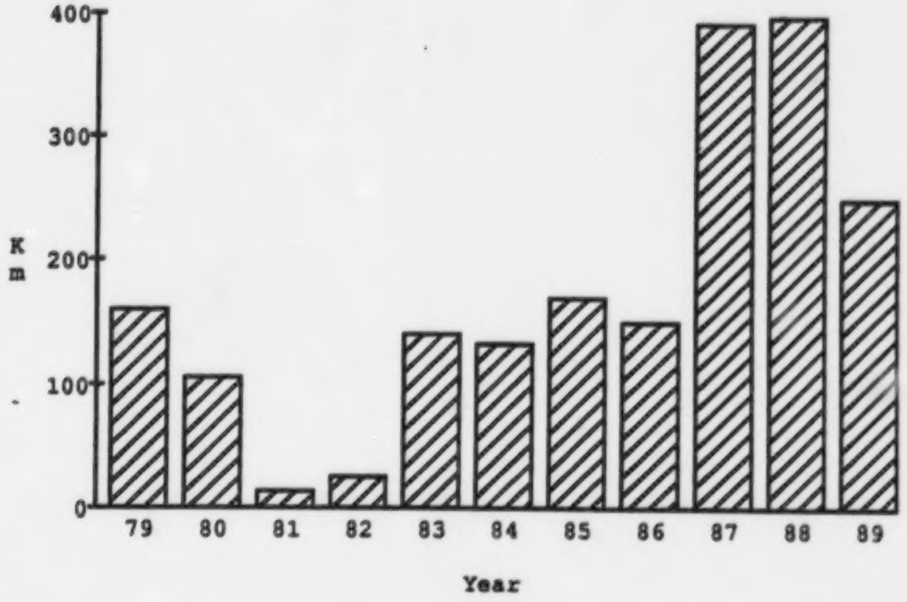


Figure 173. Chub gill net CUEs (kgs/km) for management area 5-5 (GB07), 1979 - 1989.

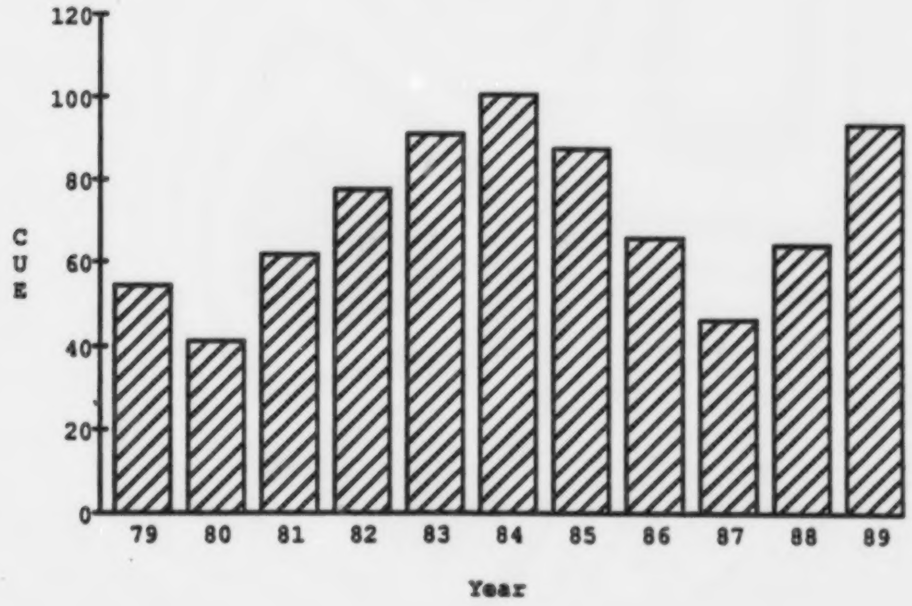


Figure 174. Chub yield (kgs/ha) for management area 5-5 (GB07), 1979 - 1989.

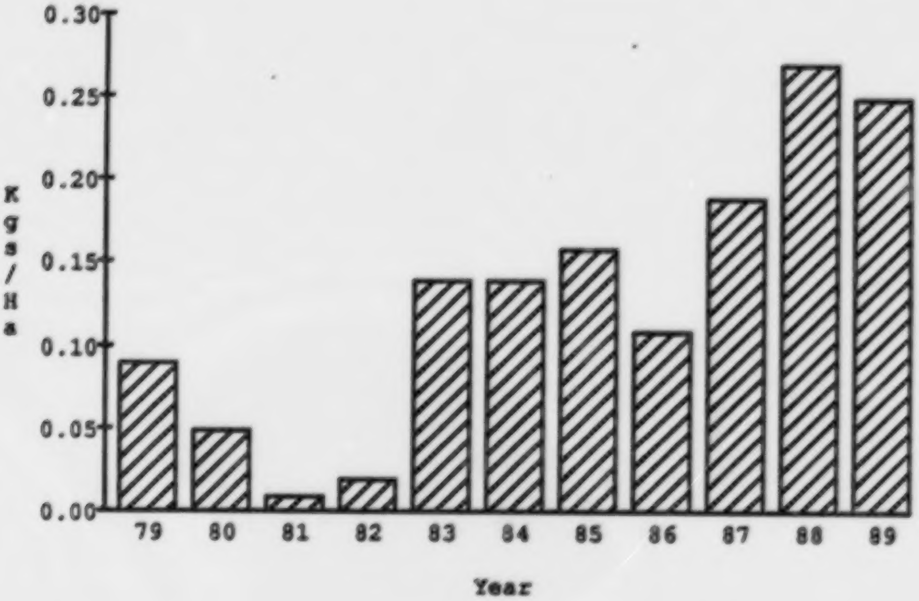


Figure 175. Yellow perch harvest and quota in kilograms for management area 5-5 (GB07), 1979 - 1989.

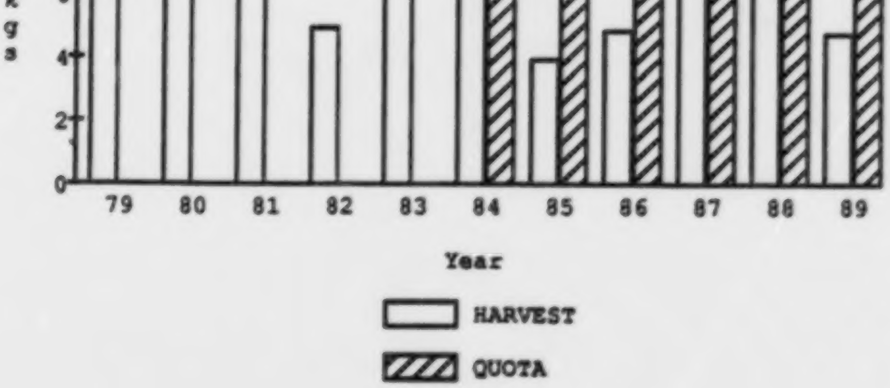


Figure 176. Annual gill net effort (km) for yellow perch in management area 5-5 (GB07), 1979 - 1989.

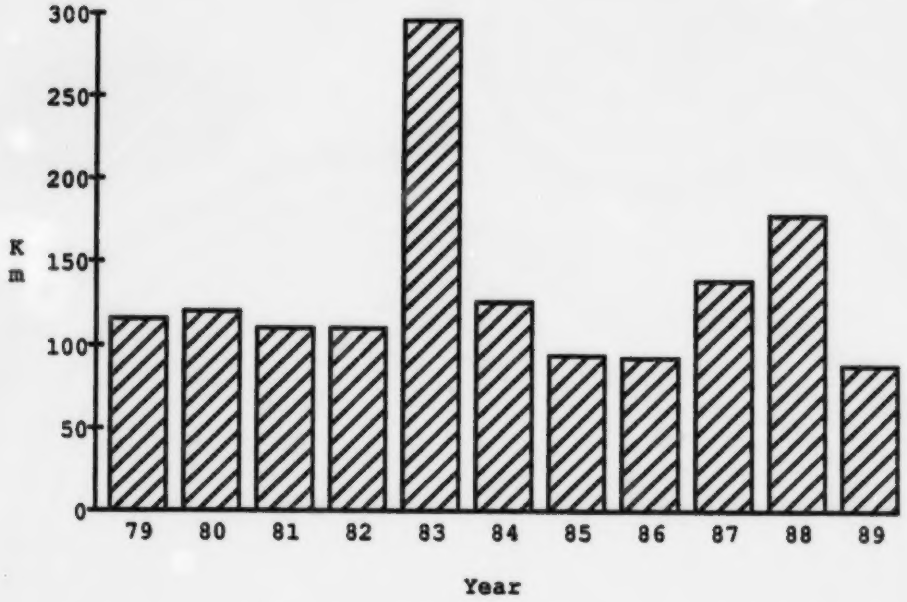
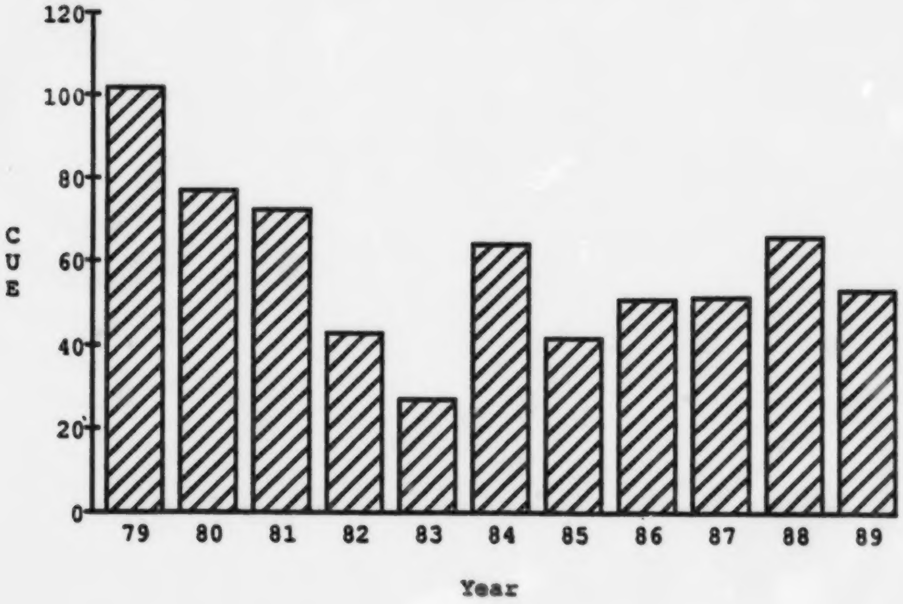


Figure 177. Yellow perch gill net CUEs (kgs/km) for management area 5-5 (GB07), 1979 - 1989.



MANAGEMENT AREA 5-6

Lake Whitefish

- Allocation remained at 16,354 kgs in 1989.
- Harvest rose from 3,691 to 6,571 kgs in 1989, 40% of the allocation (Fig. 178).
- Effort and CUE data is of questionable value and therefore not included.
- Pre-recruit data from index netting in GB10 suggests that recruitment should remain stable in 1990 and increase in 1991. However, in the absence of useful CUE and/or catch sample data we are unable to verify the applicability of the pre-recruit data to this area.
- No prediction concerning future abundance in 1990 or 1991.

Chub

- Allocation remained unchanged at 55,307 kgs in 1989.
- Harvest remained virtually constant at 41,194 kgs, 75% of the allocation in 1989 (Fig. 179).
- Effort dropped 21% to 376 kms in 1989 (Fig. 180).
- CUE rose 28% to 110 kgs/km in 1989 (Fig. 181), likely the result of continued recruitment of the 1983 year-class (Table 49).
- Abundance increased beyond that predicted.
- Yield remained at 0.28 kgs/ha in 1989 (Fig. 182).
- Pre-recruit data from index netting in GB10 and examination of commercial discards (5% of the catch in 1989) suggests that recruitment will decline in both 1990 and 1991.
- Abundance is expected to level off in 1990 and then to decline in 1991 as the 1983 and 1984 year-classes pass from the fishery.

Lake trout backcross

- Allocation remained at 4,558 kgs in 1989.
- Harvest dropped from 11,923 to 4,820 kgs in 1989, approximately 106% of the allocation (Fig. 183).
- Effort and CUE data is of questionable value and therefore not included.
- No other pertinent information is available from the fishery.
- Total mortality rates on backcross remain above quidelines for rehabilitation in the adjoining area to the south (5-8) and are assumed to be even higher in this area.

Table 47. Round weight (kgs) and value ($) by species for management area 5-6 (GB08), 1989.

SPECIES	HARVEST	VALUE
Lake trout	4820	19568
Lake whitefish	2158	4682
Lake herring	72	57
Round whitefish	40	18
Chub	41194	72570
Northern pike	5	2
Channel catfish	29	0
Yellow perch	108	319
Walleye	1	0
Discarded (mixed)	0	0

Table 48. Round weight and quota in kilograms by species for management area 5-6 (GB08), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	2158	16354	13.2
Chub	41194	55307	74.5
Yellow perch	108	2541	4.3
Walleye	1	45	2.2
Lake trout/backross	4820	4558	105.7
Northern pike	5	0	0.0
Pink salmon	0	545	0.0
Channel catfish	29	999999	0.0

Figure 178. Lake whitefish harvest and quota in kilograms for management area 5-6 (GB08), 1979 - 1989.

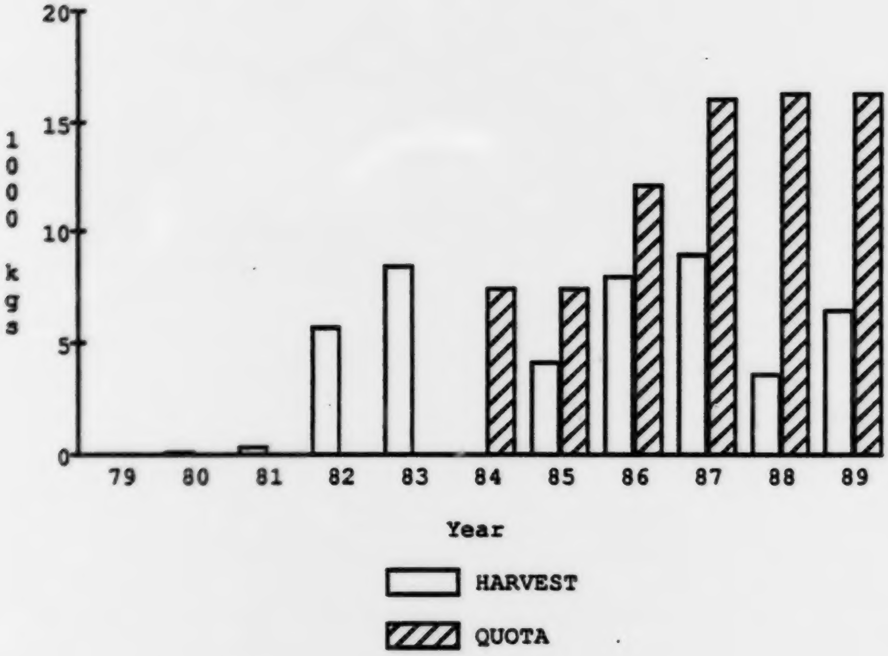


Figure 179. Chub harvest and quota in kilograms for management area 5-6 (GB08), 1979 - 1989.

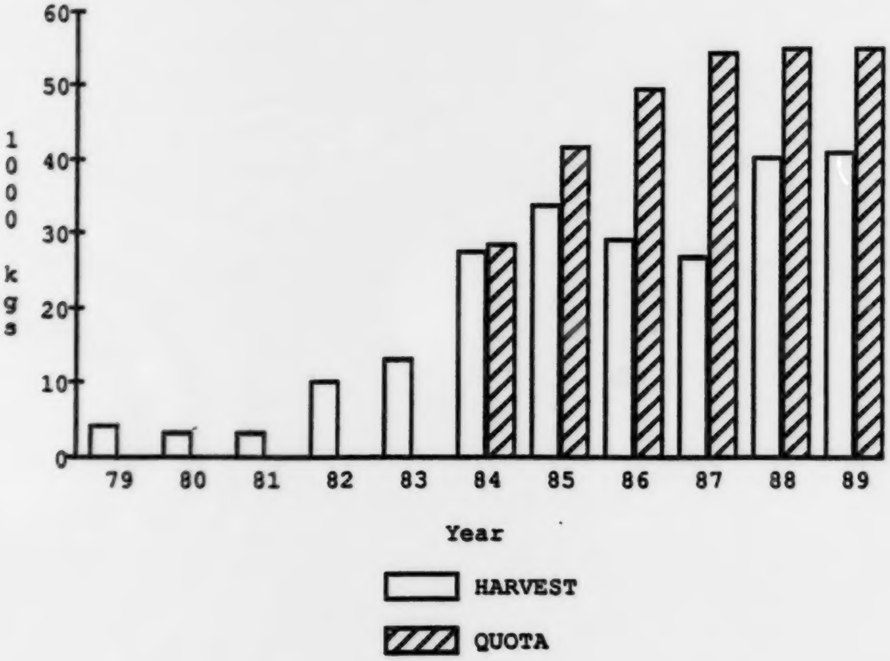


Figure 180. Annual gill net effort (km) for cnub in management area 5-6 (GB08), 1979 - 1989.

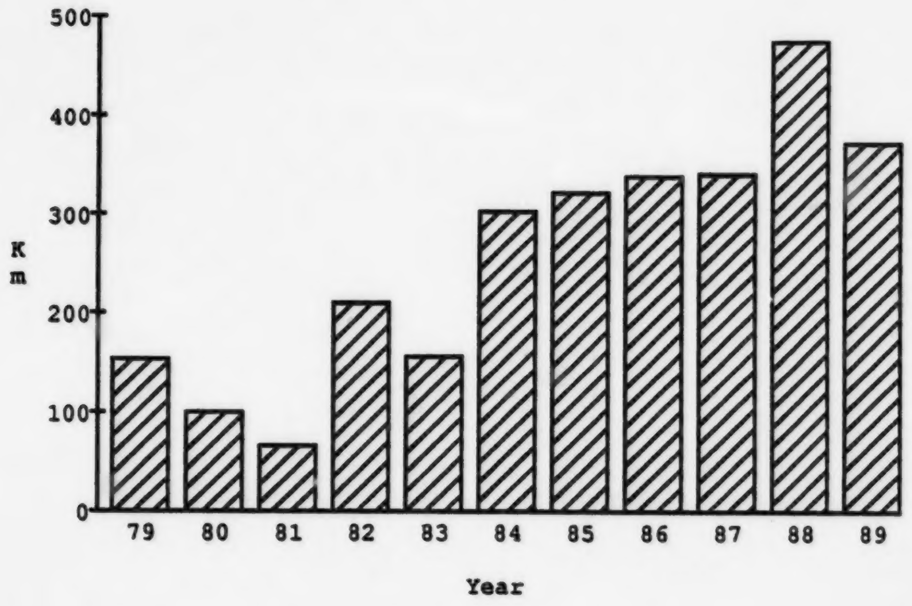


Figure 181. Chub gill net CUEs (kgs/km) for management area 5-6 (GB08), 1979 - 1989.

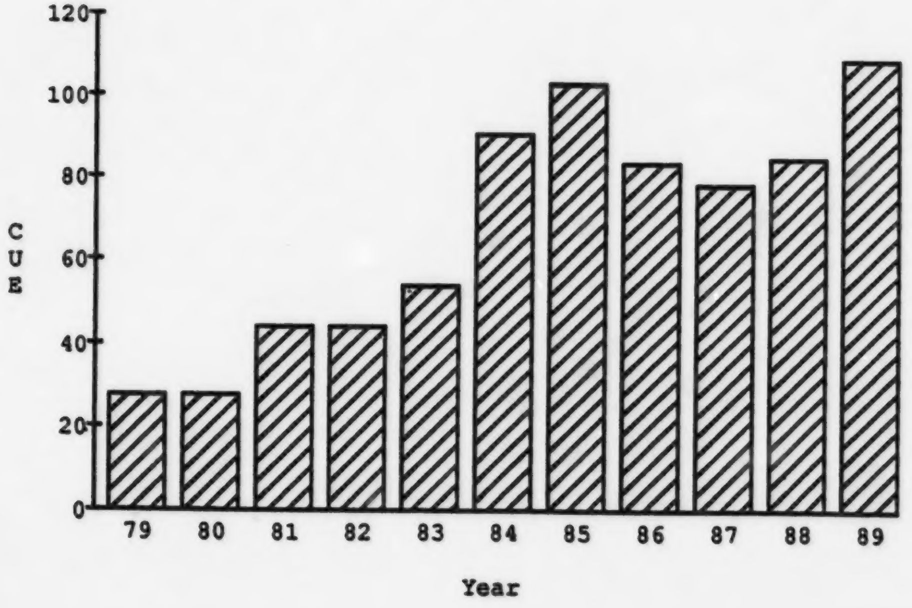


Figure 182. Chub yield (kgs/ha) for management area 5-6 (GB08), 1979 - 1989.

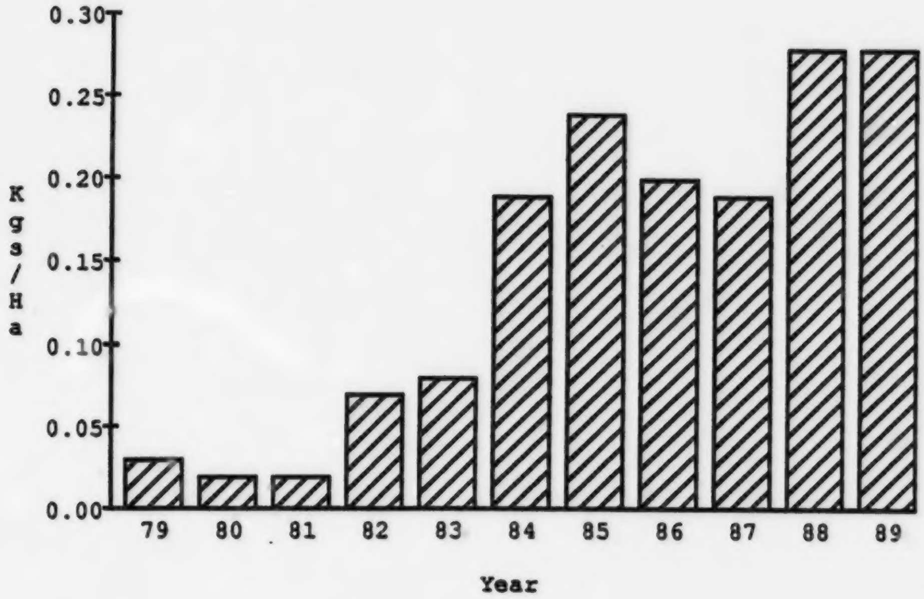
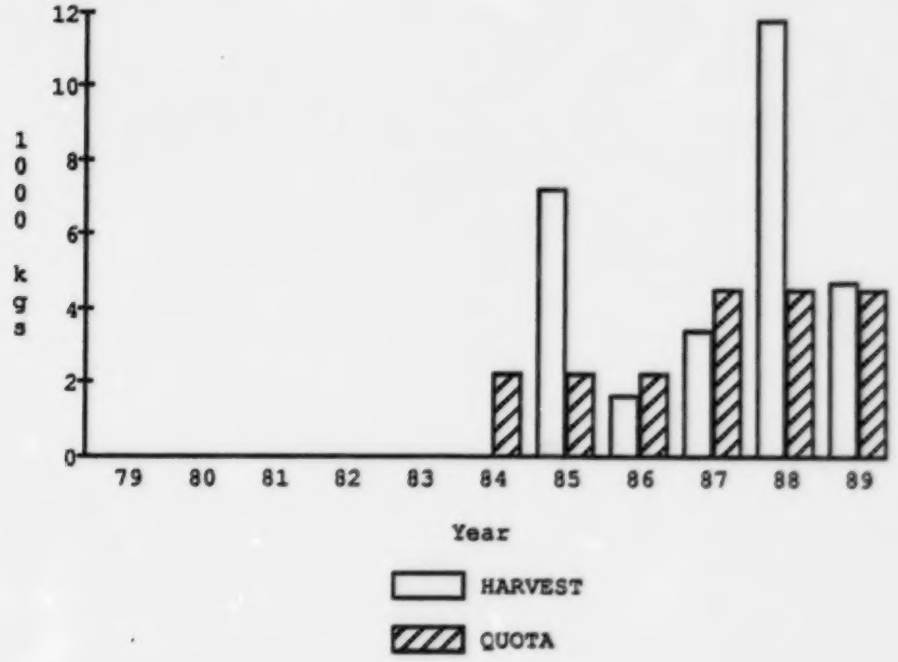


Table 49. Age-class composition of chub caught in gill net in management area 5-6 (GB08), 1984 - 1989.

AGE	1984	1985	1986	1987	1988	1989
1	0	0	0	0		0
2	343	0	179	0		0
3	6622	8033	7638	1935		443
4	30017	31615	41468	26177		2217
5	55081	54193	58224	34194		35251
6	18309	49025	29569	46272		136284
7	7827	10348	1583	16127		15851
8	2292	1712	82	4846		7007
9	1554	823	0	296		2572
10	1848	0	0	0		0
11	173	1364	0	0		0
12	471	0	0	0		0
13	0	0	0	0		0
>13	0	0	0	0		0

Figure 183. Lake trout/backcross harvest and quota in kilograms for management area 5-6 (GB08), 1979 - 1989.



MANAGEMENT AREA 5-7

Lake Whitefish

- Allocation remained at 4,558 kgs in 1989.
- Harvest rose 48% to 6,572 kgs in 1989, 27% of the allocation (Fig. 184).
- Effort remained constant at 101 kms in 1989 (Fig. 185).
- CUE rose 52% to 65 kgs/km in 1989 (Fig. 186).
- All of the above statistics are of questionable value in light of the number of missing CF1s.
- Apparent increase in abundance likely a result of missing CF1s.
- Pre-recruit data from index netting in GB10 suggests that recruitment should remain stable in 1990 and increase in 1991.
- No reason to assume abundance will change substantially in 1990.

Chub

- Allocation dropped 8% to 10,538 kgs in 1989.
- Harvest dropped 6% to 9,870 kgs in 1989 (Fig. 187). Percent allocation taken remained at 94%.
- Effort dropped 30% to 76 kms in 1989 (Fig. 188).
- CUE rose 34% to 130 kgs/km in 1989 (Fig. 189).
- Missing CF1s are not a concern as the fishermen failing to report do not typically fish for chub.
- Abundance rose in 1989, likely the result of recruitment of the strong 1983 and good 1984 year-classes.
- Yield was 0.22 kgs/ha in 1989 (Fig. 190).
- Pre-recruit data from index netting in GB09 suggests that recruitment should remain stable in 1990 and decrease in 1991.
- Abundance should remain good in 1990 and begin to decrease in 1991.

Yellow perch

- The 1989 allocation remained unchanged at 11,226 kgs.
- Harvest dropped from 6,147 to 1,693 kgs in 1989, 15% of the allocation (Fig. 191).
- Effort dropped 76% to 23 kms in 1989 (Fig. 192).
- CUE dropped 22% to 44 kgs/km in 1989 (Fig. 193).
- All of the above statistics are of questionable value in light of the number of missing CF1s.
- No comment on future abundance.

Table 50. Round weight (kgs) and value ($) by species for management area 5-7 (GB09), 1989.

SPECIES	HARVEST	VALUE
Lake sturgeon	23	92
Pink salmon	2	6
Lake trout	713	2620
Lake whitefish	6572	13719
Lake herring	364	341
Round whitefish	68	68
Chub	9870	17323
Northern pike	139	308
Suckers	1089	0
Carp	526	176
Channel catfish	167	173
Burbot	1312	263
White bass	201	0
Rock bass	26	0
Yellow perch	1693	4865
Walleye	1375	4013
Discarded (mixed)	0	0

Table 51. Round weight and quota in kilograms by species for management area 5-7 (GB09), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	6572	24338	27.0
Chub	9870	10538	93.7
Yellow perch	1693	11226	15.1
Walleye	1375	2085	65.9
Lake trout/backross	713	1325	53.8
Northern pike	139	1085	12.8
Pink salmon	2	796	0.3
Sturgeon	23	571	4.0
Channel catfish	167	999999	0.0

Figure 184. Lake whitefish harvest and quota in kilograms for management area 5-7 (GB09), 1979 - 1989.

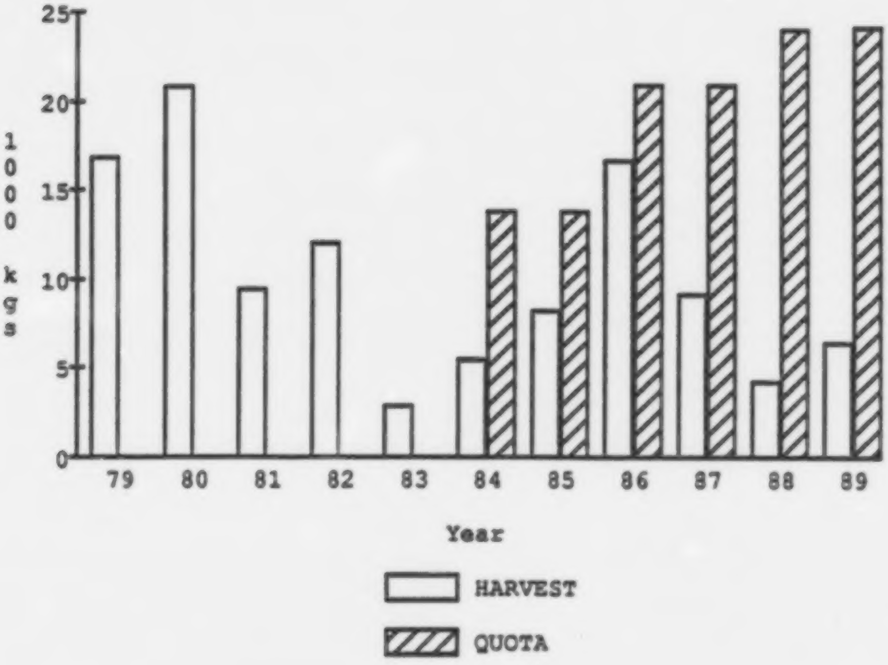


Figure 185. Annual gill net effort (km) for lake whitefish in management area 5-7 (GB09), 1979 - 1989.

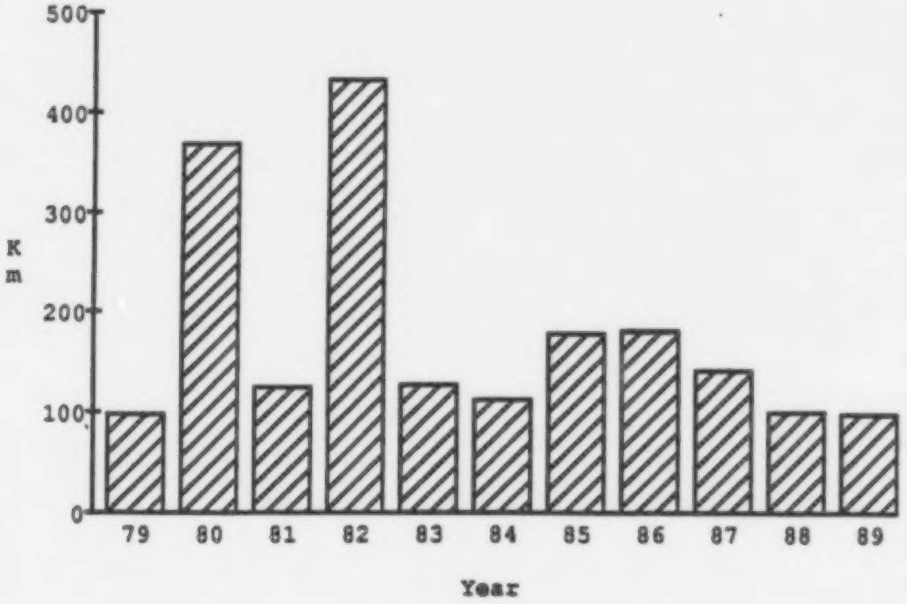


Figure 186. Lake whitefish gill net CUEs (kgs/km) for management area 5-7 (GB09), 1979 - 1989.

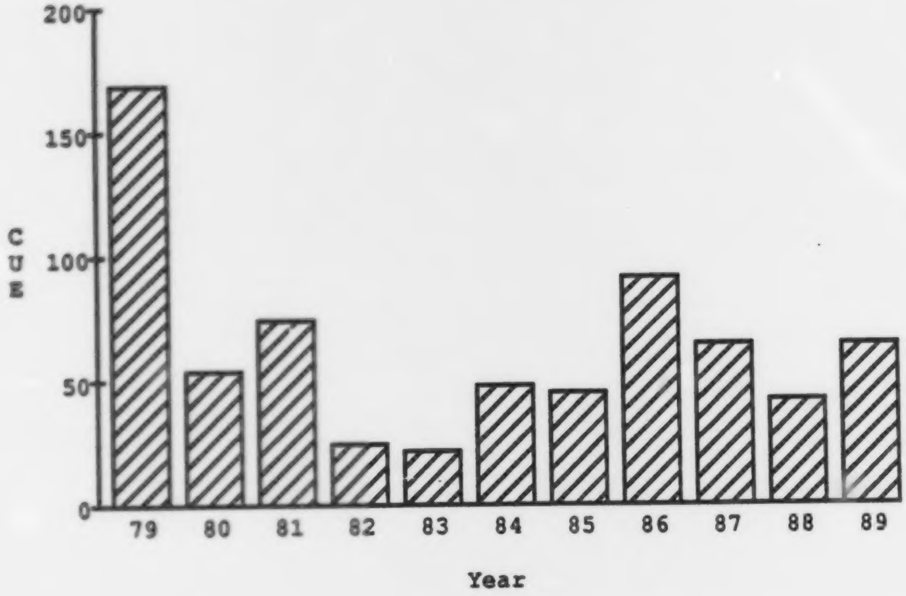


Figure 187. Chub harvest and quota in kilograms for management area 5-7 (GB09), 1979 - 1989.

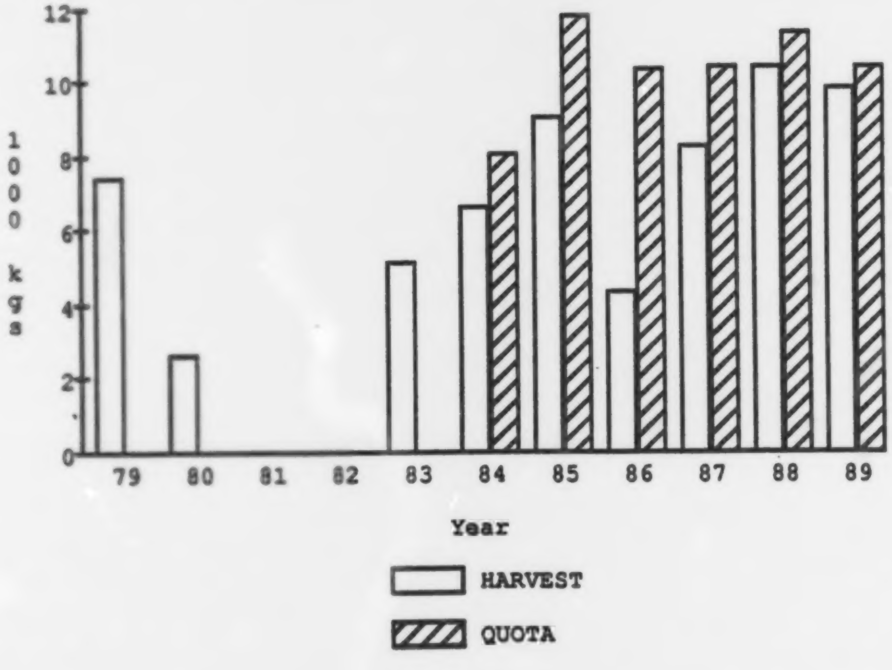


Figure 188. Annual gill net effort (km) for chub in management area 5-7 (GB09), 1979 - 1989.

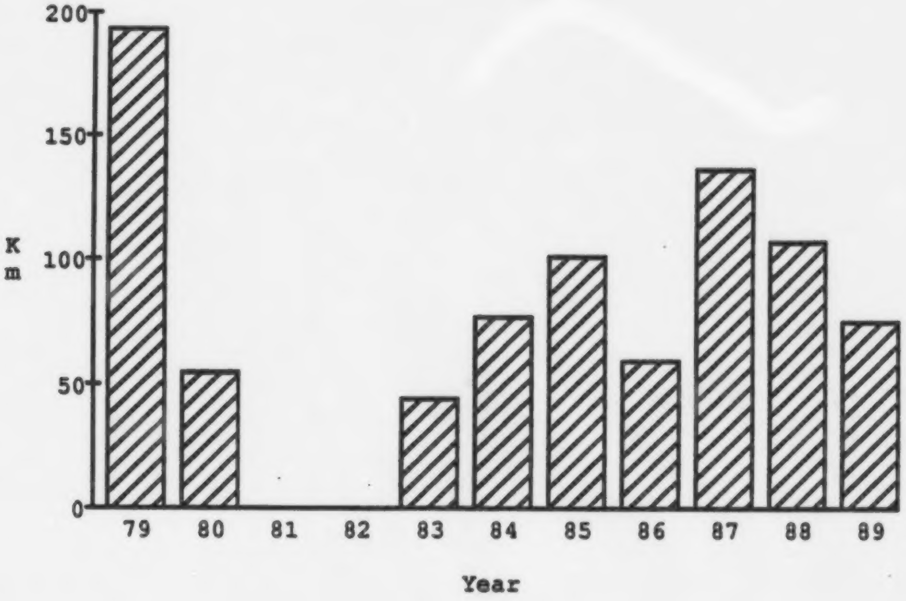


Figure 189. Chub gill net CUEs (kgs/km) for management area 5-7 (GB09), 1979 - 1989.

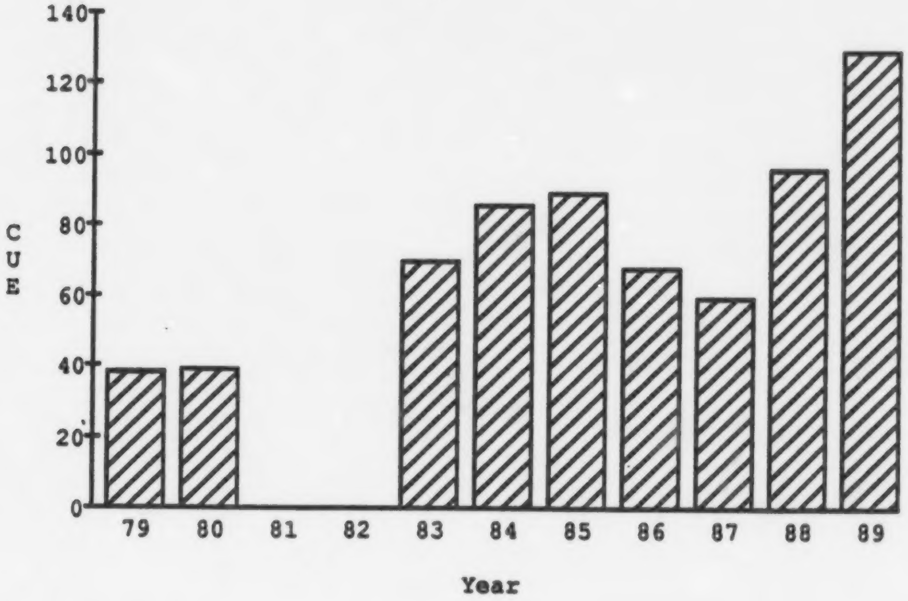


Figure 190. Chub yield (kgs/ha) for management area 5-7 (GB09), 1979 - 1989.

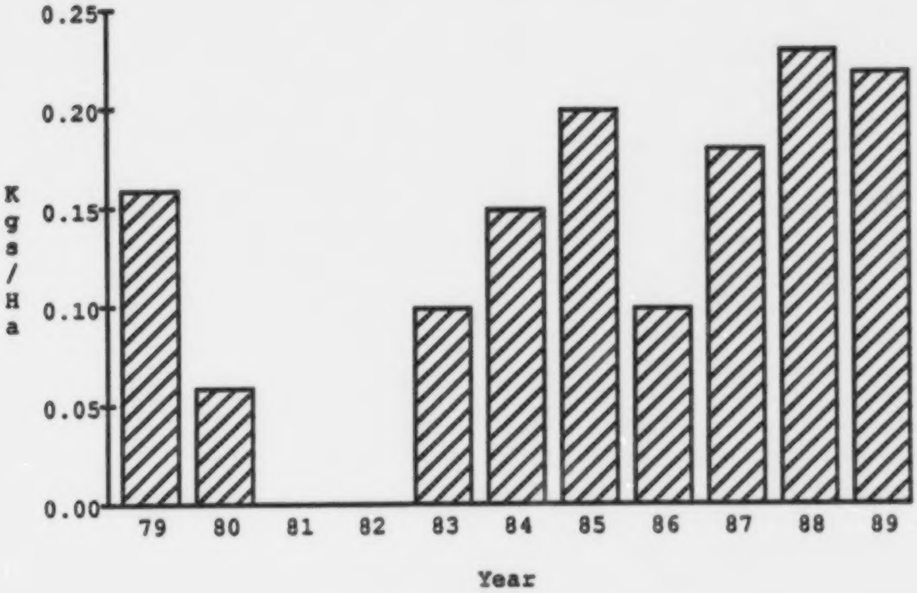


Figure 191. Yellow perch harvest and quota in kilograms for management area 5-7 (GB09), 1979 - 1989.

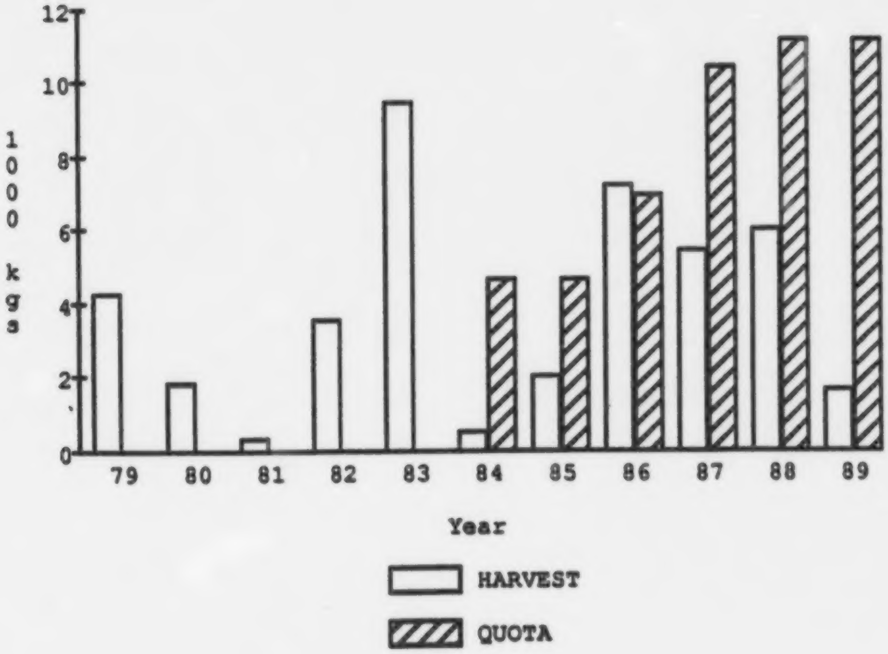


Figure 192. Annual gill net effort (km) for yellow perch in management area 5-7 (GB09), 1979 - 1989.

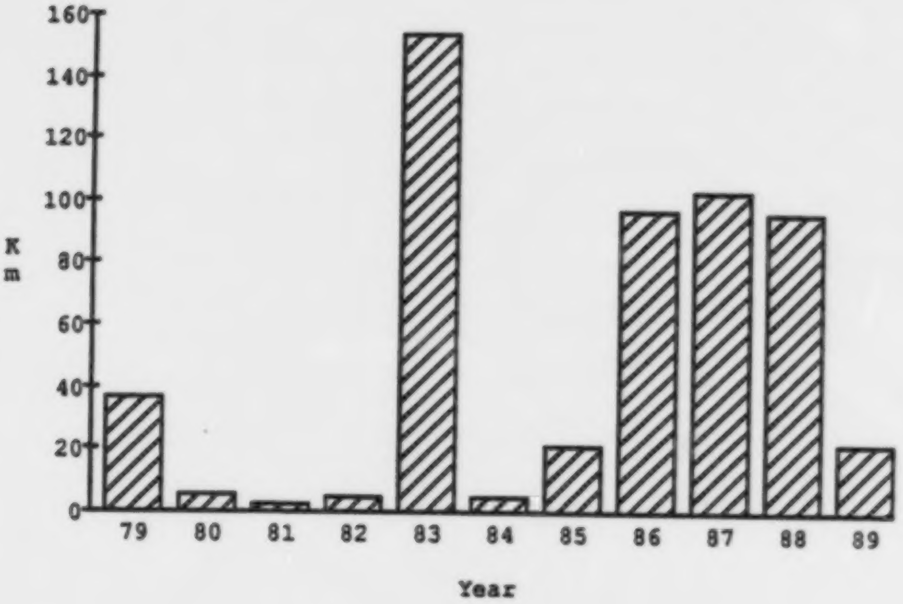
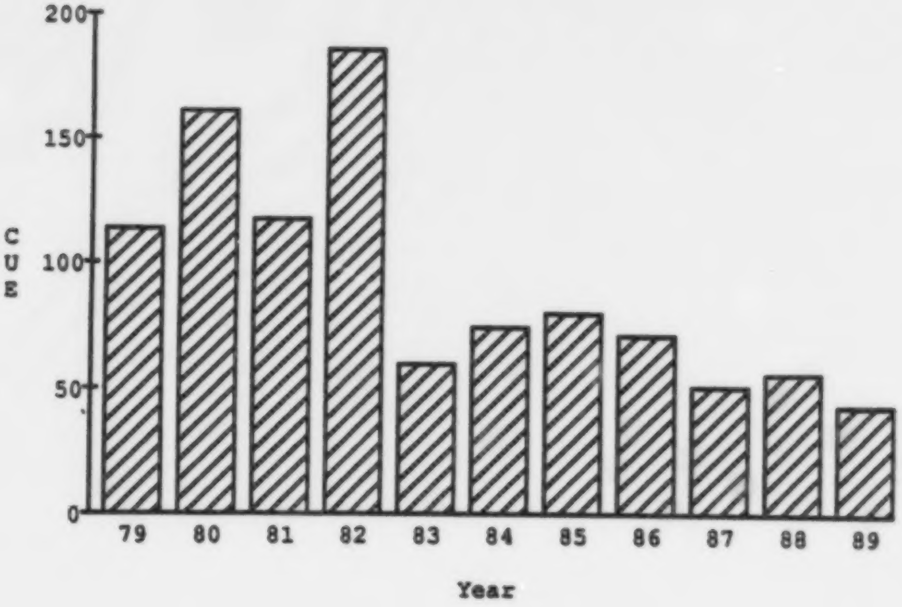


Figure 193. Yellow perch gill net CUEs (kgs/km) for management area 5-7 (GB09), 1979 - 1989.



MANAGEMENT AREA 5-8

Lake Whitefish

- Allocation remained unchanged at 9,072 kgs in 1989.
- Harvest rose to 4,114 kgs in 1989, 45% of the allocation (Fig. 194). Harvest limited by splake allocations.
- Effort dropped 27% to 27 kms in 1989 (Fig. 195).
- CUE rose 66% to 152 kgs/km in 1989 (Fig. 196). Combination of low harvest and lack of catch sample data prevents use of CUE as an indicator of abundance.
- Pre-recruit data from index netting in GB10 suggests that recruitment should increase late in 1990 and continue to increase in 1991.
- A strong 1987 year class should begin to appear in the fishery in 1990 or 1991. Unable to be more explicit because of lack of catch sample data.
- Abundance should remain good in 1990 and begin to increase in 1991.

Chub

- Allocation remained unchanged at 16,533 kgs in 1989.
- Harvest rose 37% to 22,366 kgs in 1989, 135% of the allocation (Fig. 197).
- Effort dropped 8% to 160 kms in 1989 (Fig. 198).
- CUE rose 48% to 140 kgs/km in 1989 (Fig. 199).
- Age 5 and 6 fish were well represented in 1989.
- Abundance actually increased in 1989 rather than remaining at the 1988 level as predicted. Sporadic access to the fishery has prevented us from collecting the trend data necessary to make more accurate predictions.
- Yield rose to 0.33% in 1989 near the mid-decade levels (Fig. 200).
- Pre-recruit data from index netting in GB10 suggests that recruitment should remain constant in 1990 and decrease in 1991.
- Abundance should remain at 1989 levels in 1990 and then begin to drop in 1991.

Yellow perch

- The 1989 allocation remained at 2,268 kgs.
- Negligible harvest and effort in 1989.

Lake trout backcross

- The 1989 allocation remained at 4,536 kgs.
- Harvest rose to 101% of the 1989 allocation (Fig. 201).
- Total mortality rates above age 4 remain above 50%, above the 40% guidelIne.

Table 52. Round weight (kgs) and value ($) by species for management area 5-8 (GB10), 1989.

SPECIES	HARVEST	VALUE
Lake trout	4584	19819
Lake whitefish	4114	11582
Chub	22366	38850
Burbot	1814	0
Yellow perch	4	9
Discarded (mixed)	0	0

Table 53. Round weight and quota in kilograms by species for management area 5-8 (GB10), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	4114	9072	45.3
Chub	22366	16533	135.3
Yellow perch	4	2268	0.2
Lake trout/backross	4584	4536	101.1
Pink salmon	0	91	0.0

Figure 194. Lake whitefish harvest and quota in kilograms for management area 5-8 (GB10), 1979 - 1989.

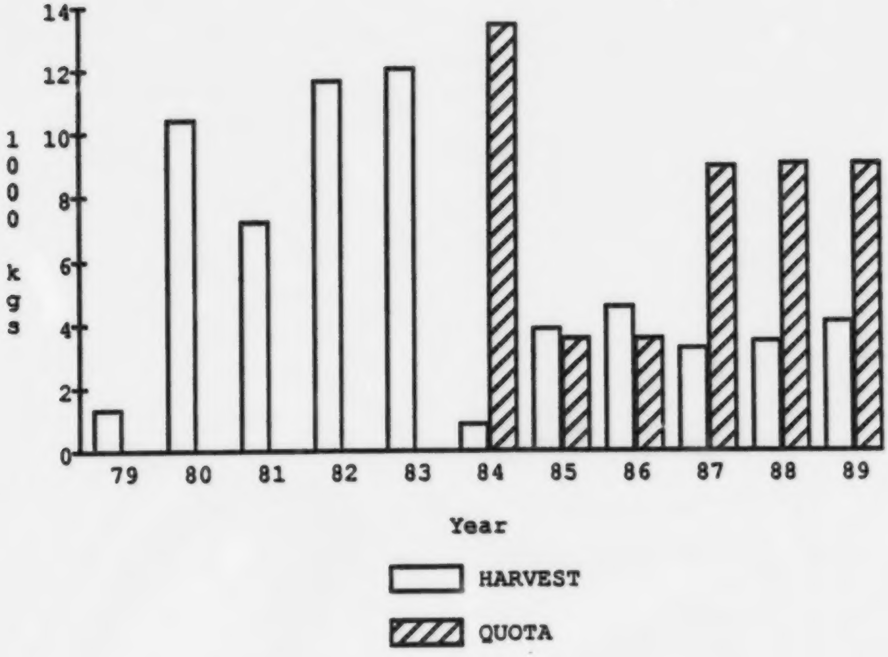


Figure 195. Annual gill net effort (km) for lake whitefish in management area 5-8 (GB10), 1979 - 1989.

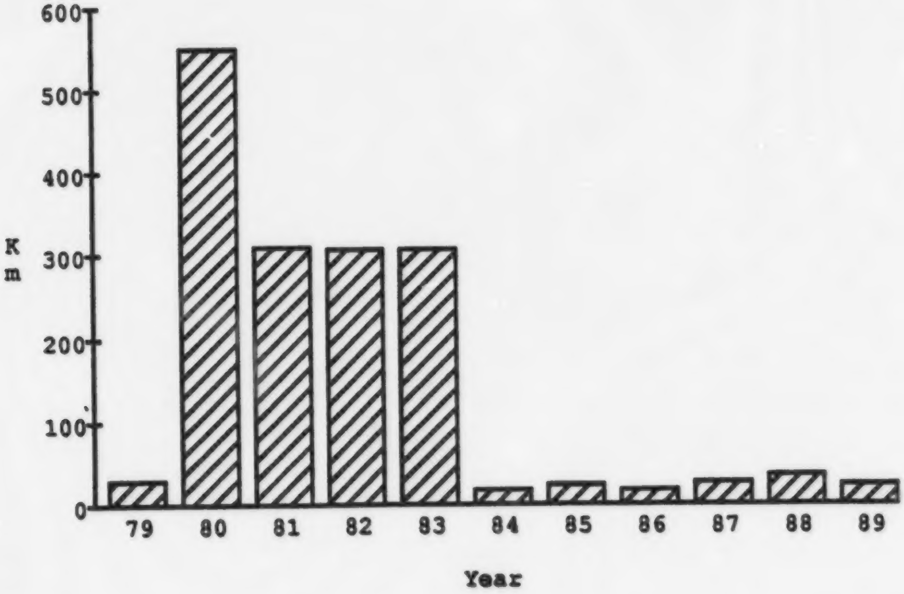


Figure 196. Lake whitefish gill net CUEs (kgs/km) for management area 5-8 (GB10), 1979 - 1989.

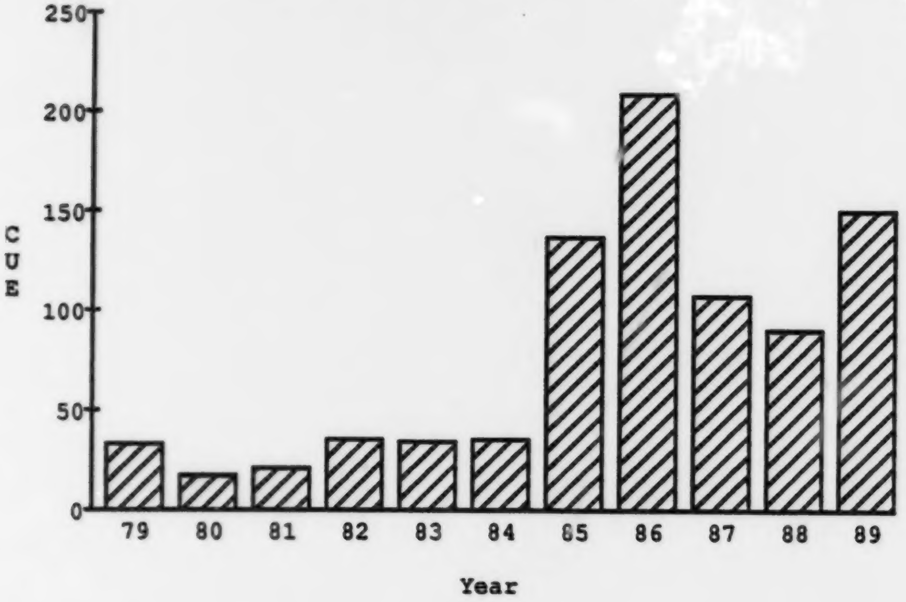


Figure 197. Chub harvest and quota in kilograms for management area 5-8 (GB10) 1979 - 1989.

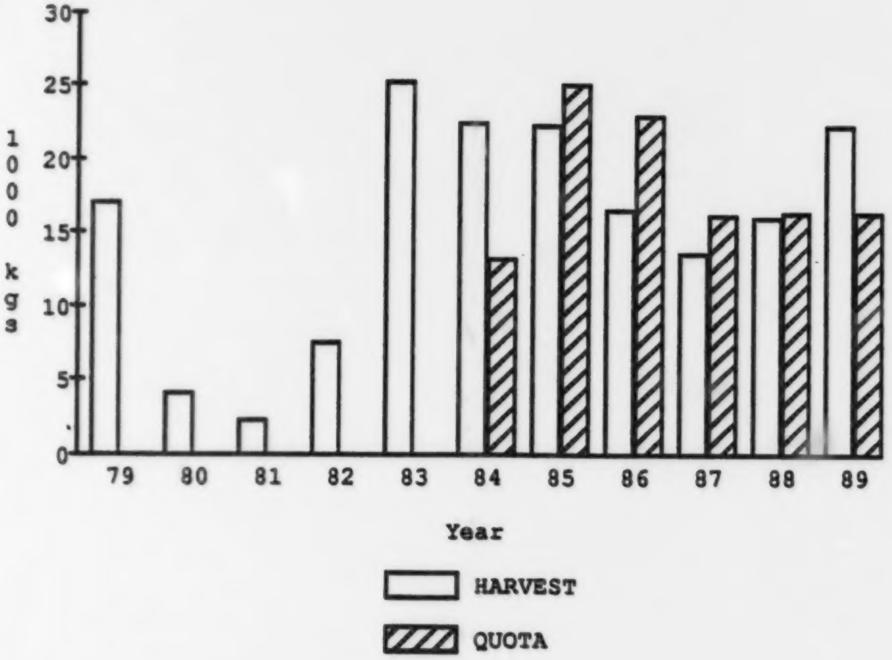


Figure 198. Annual gill net effort (km) for chub in management area 5-8 (GB10), 1979 - 1989.

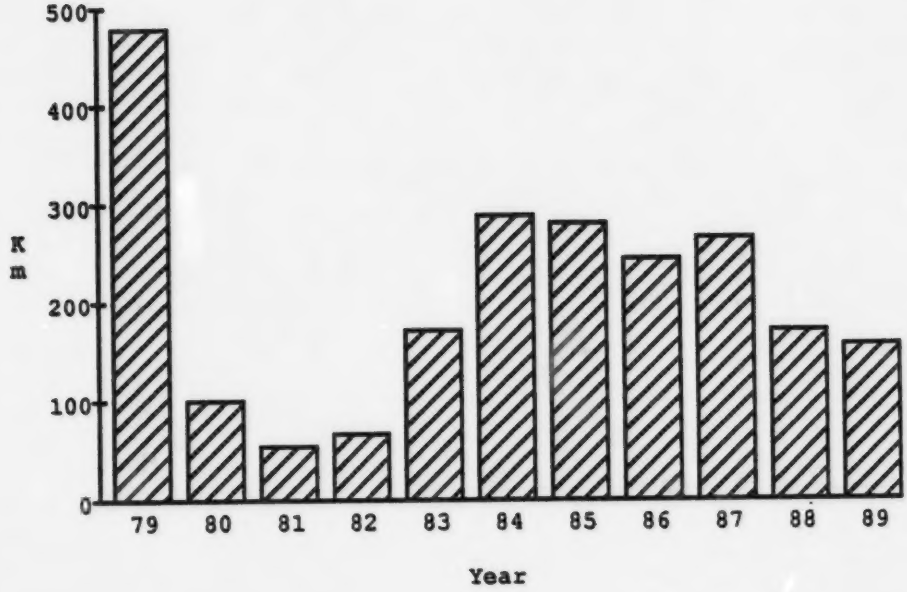


Figure 199. Chub gill net CUEs (kgs/km) for management area 5-8 (GB10), 1979 - 1989.

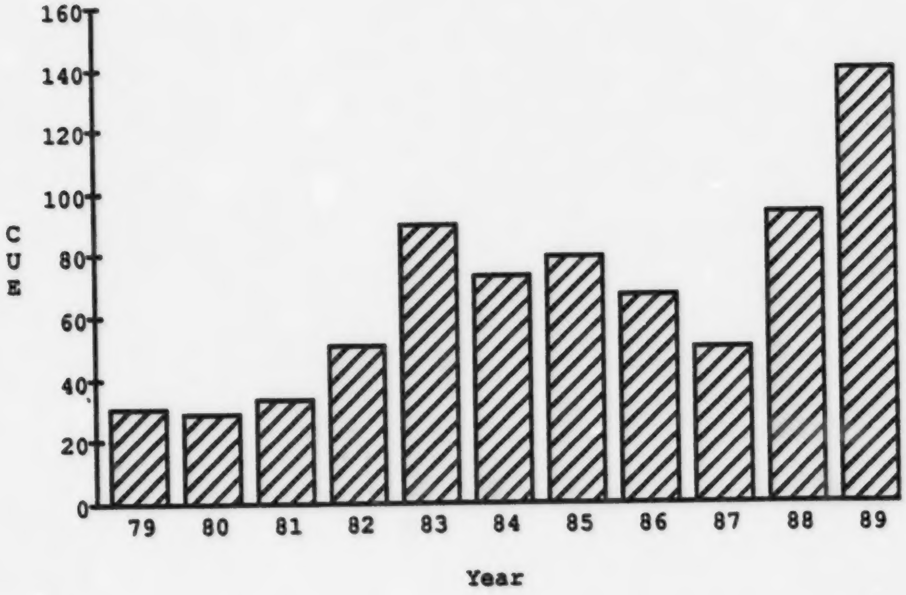


Figure 200. Chub yield (kgs/ha) for management area 5-8 (GB10), 1979 - 1989.

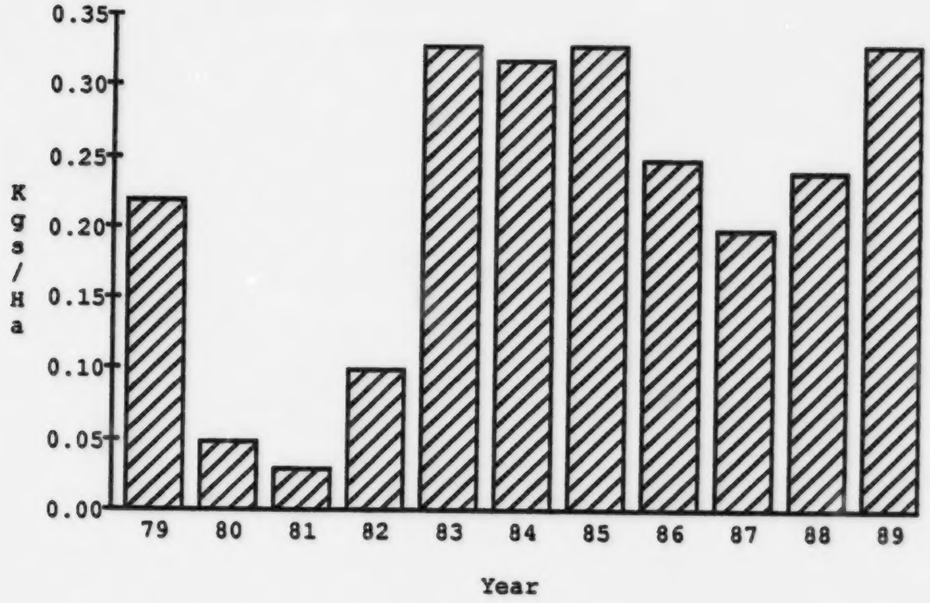
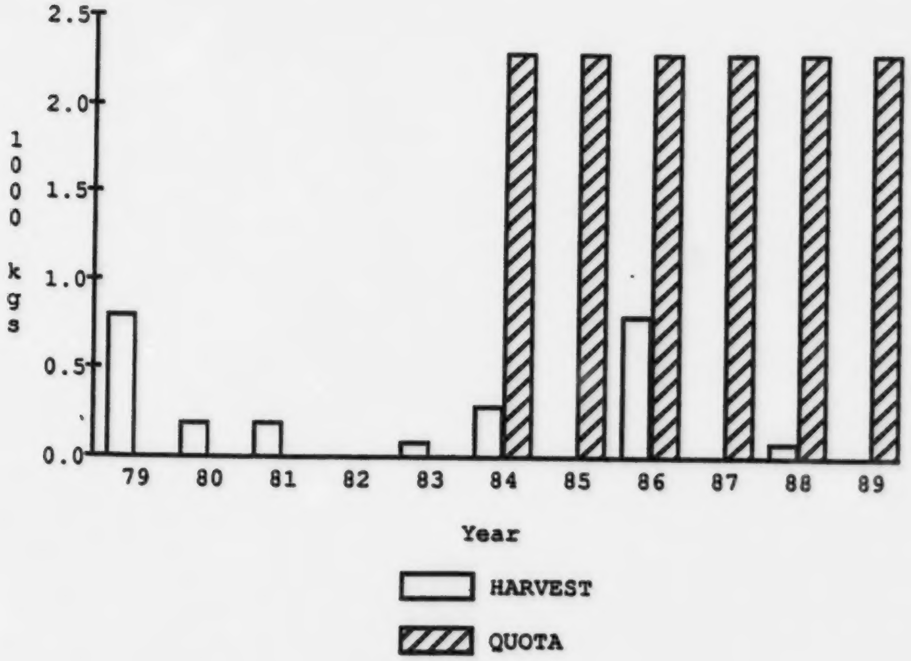


Figure 201. Lake trout/backcross harvest and quota in kilograms for management area 5-8 (GB10), 1979 - 1989.



MANAGEMENT AREA 5-9

Lake Whitefish

- Allocation dropped 6% to 38,460 kgs in 1989.
- Harvest dropped to 18,663 kgs (4%) in 1989, 48% of the allocation (Fig. 202). Harvest limited by splake allocations.
- Effort dropped 8% to 137 kms in 1989 (Fig. 203).
- CUE remained virtually unchanged at 137 kgs/km in 1989 (Fig. 204).
- No change in abundance in 1989 as predicted.
- Access problems prevented collection of catch sample data in 1989.
- Pre-recruit data from index netting in GB10 suggests that recruitment should increase late in 1990 and continue to increase in 1991.
- A strong 1987 year class should begin to appear in the fishery in 1990 or 1991. Unable to be more explicit because of lack of catch sample data.
- No change in abundance expected before 1991.

Chub

- Allocation rose 67% to 11,303 kgs in 1989.
- Harvest rose 58% to 11,171 kgs in 1989 (Fig. 205). Percent allocation harvested stayed at 99%.
- Effort dropped 8% to 85 kms in 1989 (Fig. 206).
- CUE rose 73% to 131 kgs/km in 1989 (Fig. 207).
- Abundance rose in 1989 rather than remaining constant as predicted. No further comment possible in the absence of catch sample data.
- Chub yield increased to 0.31 kgs/ha (Fig. 208).
- Pre-recruit data from index netting in GB10 suggests that recruitment should remain stable in 1990 and decrease in 1991.
- Abundance should remain much the same through 1990, but can be expected to decline as the 1983 year-class works its way through the fishery.

Yellow perch

- Allocation unchanged at 6,917 kgs in 1989.
- Little of the allocation was taken in 1989 for reasons seemingly unrelated to abundance alone.
- Little improvement in abundance can be expected before 1991.

Lake trout backcross

- Allocation remained unchanged at 4,937 kgs in 1989.
- Harvest dropped 93% to 4,574 kgs in 1989, 93% of the allocation (Fig. 209).
- Total mortality rates on backcross remain above quidelines for rehabilitation in the adjoining area to the west (5-8) and are assumed to be similar.

Table 54. Round weight (kgs) and value ($) by species for management area 5-9 (GB11), 1989.

SPECIES	HARVEST	VALUE
Lake sturgeon	73	262
Pink salmon	4	6
Lake trout	709	2606
Lake whitefish	18663	43171
Lake herring	15	28
Round whitefish	32	14
Chub	11171	16070
Carp	14	17
Channel catfish	89	108
Yellow perch	129	443
Walleye	131	870
Discarded (mixed)	0	0

Table 55. Round weight and quota in kilograms by species for management area 5-9 (GB11), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	18663	38460	48.5
Chub	11171	11303	98.8
Yellow perch	129	6917	1.9
Walleye	131	820	16.0
Lake trout/backross	4576	4937	92.7
Pink salmon	4	270	1.5
Sturgeon	73	136	53.7
Channel catfish	89	999999	0.0

Figure 202. Lake whitefish harvest and quota in kilograms for management area 5-9 (GB11), 1979 - 1989.

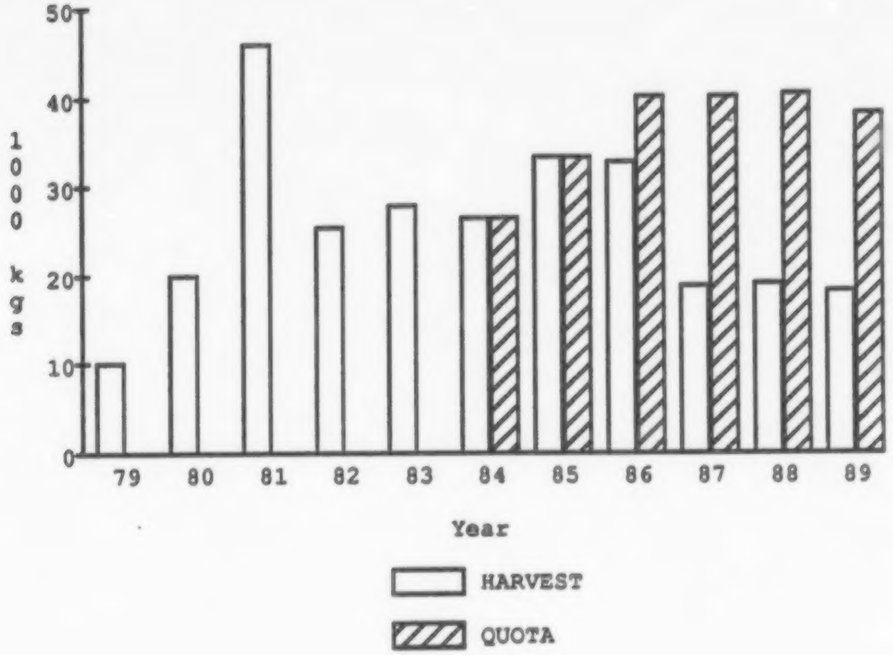


Figure 203. Annual gill net effort (km) for lake whitefish in management area 5-9 (GB11), 1979 - 1989.

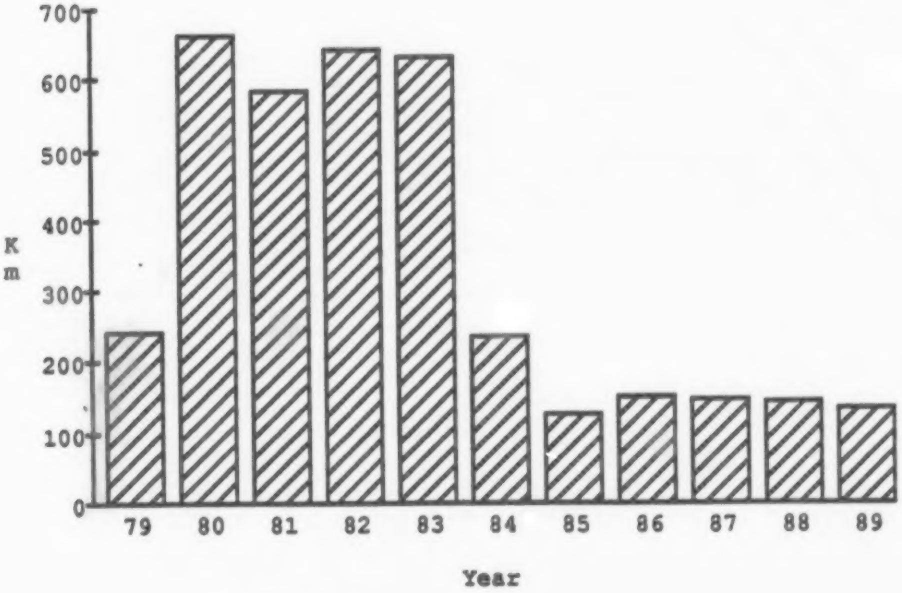


Figure 204. Lake whitefish gill net CUEs (kgs/km) for management area 5-9 (GB11), 1979 - 1989.

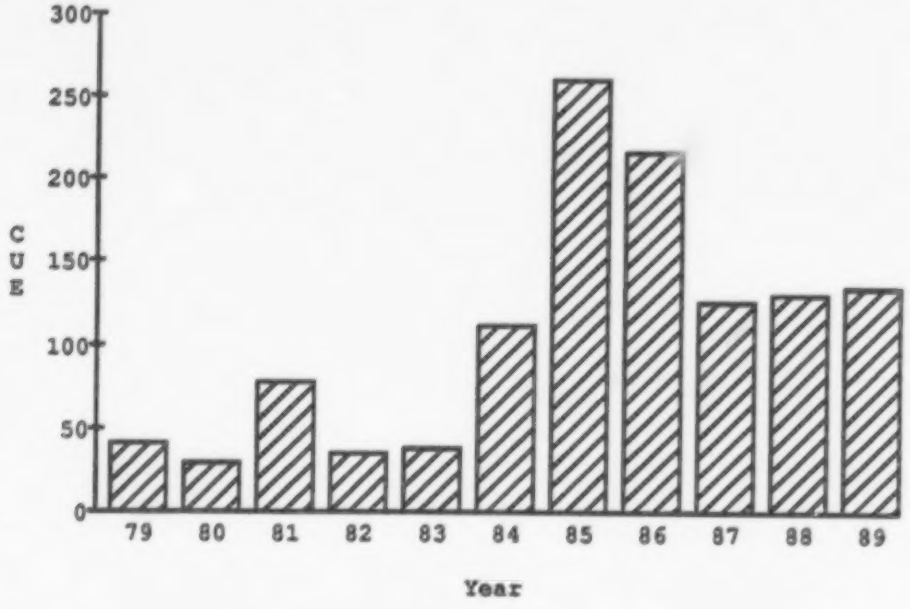


Figure 205. Chub harvest and quota in kilograms for management area 5-9 (GB11), 1979 - 1989.

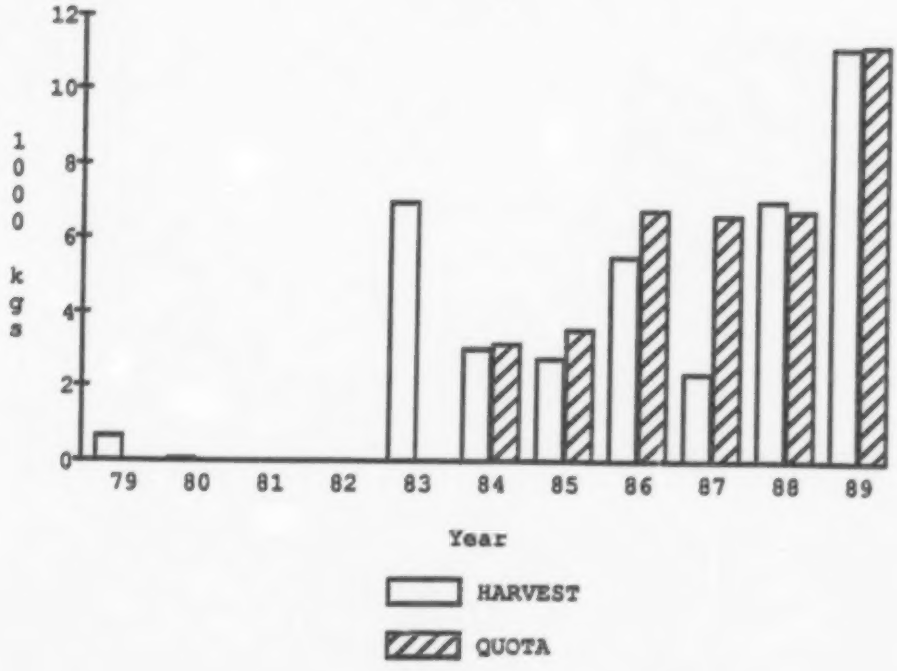


Figure 206. Annual gill net effort (km) for chub in management area 5-9 (GB11), 1979 - 1989.

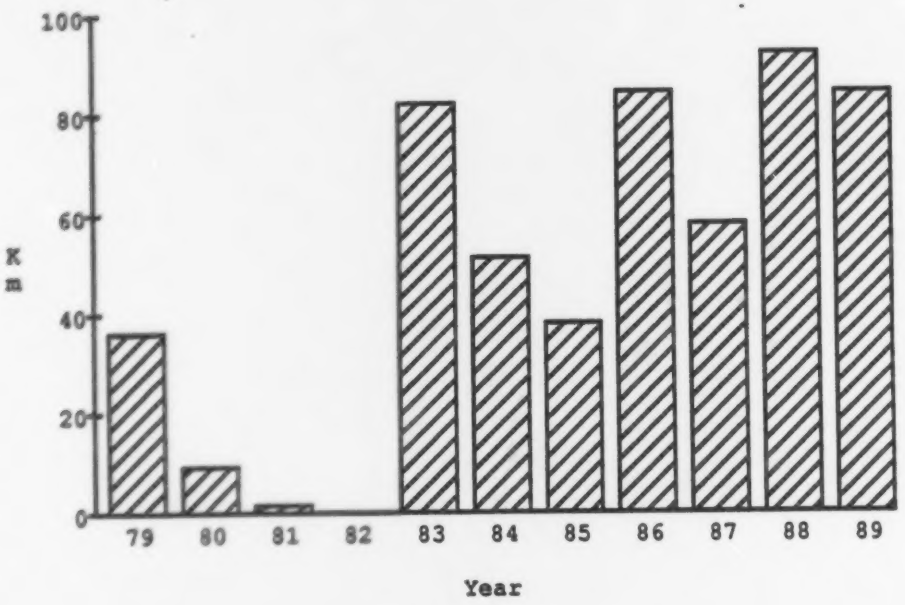


Figure 207. Chub gill net CUEs (kgs/km) for management area 5-9 (GB11), 1979 - 1989.

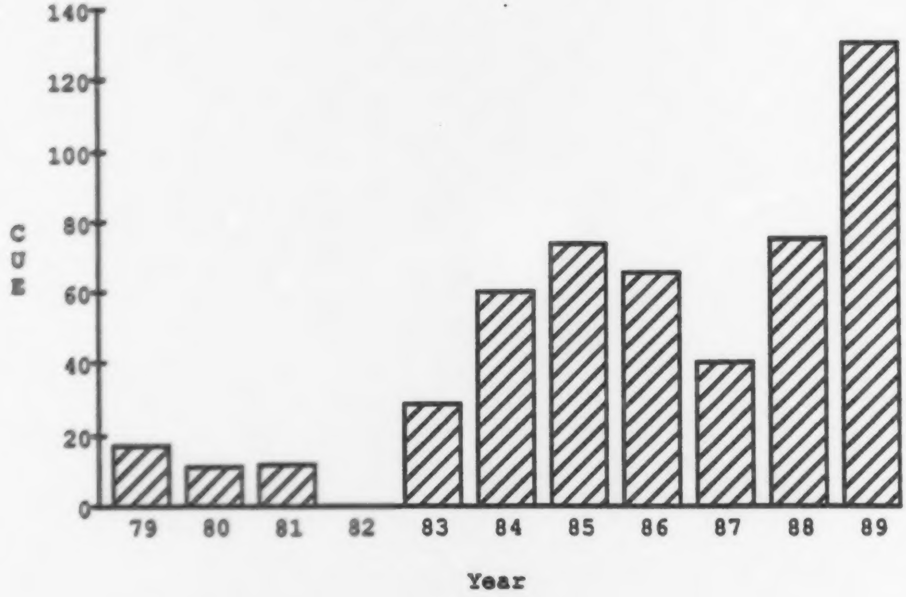


Figure 208. Chub yield (kgs/ha) for management area 5-9 (GB11), 1979 - 1989.

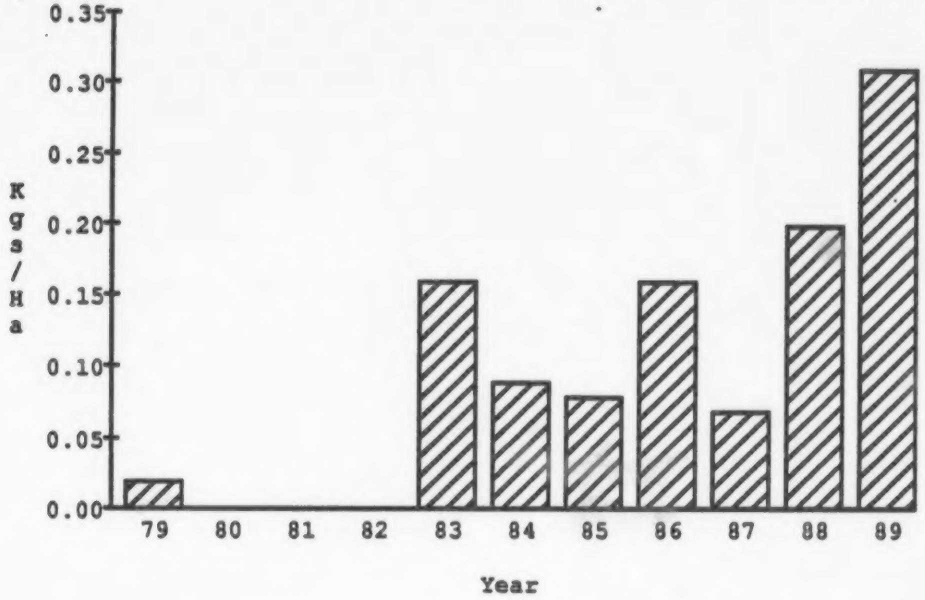


Figure 209. Lake trout/backcross harvest and quota in kilograms for management area 5-9 (GB11), 1979 - 1989.

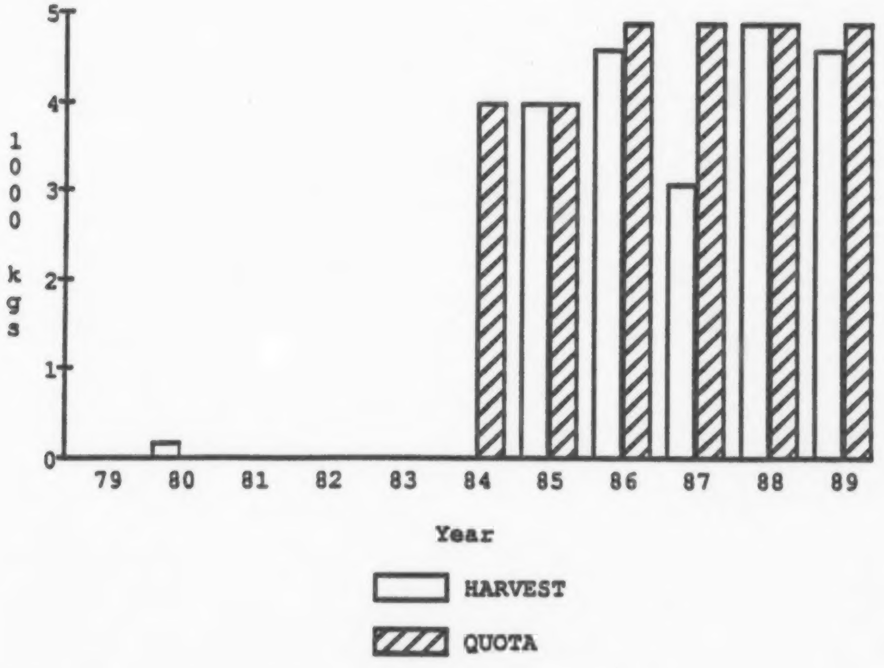


Table 56. Round weight (kgs) by species by management area for North Channel, 1989.

SPECIES	AREA 6-1	AREA 6-2	AREA 6-3	TOTAL
Lake sturgeon	2087	1531	0	3618
Pink salmon	5524	0	0	5524
Lake trout	4625	1356	941	6922
Lake whitefish	138358	2591	849	141798
Lake herring	10988	287	0	11275
Round whitefish	2816	12	2	2830
Rainbow smelt	39885	0	0	39885
Northern pike	6422	417	0	6839
Suckers	83549	3474	0	87023
Carp	1039	0	0	1039
Channel catfish	341	4	0	345
Bullhead	234	68	0	302
Burbot	1067	256	0	1323
Rock bass	471	371	0	842
Crappie	24	0	0	24
Yellow perch	30029	8889	5	38923
Walleye	16416	6	0	16422
Discarded (mixed)	24274	122	0	24396
Total	368149	19384	1797	389330

Table 57. Estimated effort by management area for North Channel, 1989.

MANAGEMENT AREA	GILL NET (1000 m)			TRAP NETS
	SMALL MESH	LARGE MESH	TOTAL	(# nets)
6-1	762	3621	4383	219
6-2	76	76	152	44
6-3	6	1	7	0
TOTAL	844	3698	4542	263

NORTH CHANNEL

MANAGEMENT AREA 6-1

Lake Whitefish

- Allocation remained virtually unchanged at 243,007 kgs in 1989.
- Harvest fell 22% to 138,358 kgs in 1989, 57% of the allocation (Fig. 210).
- Harvest increased 142% to 54,068 kgs in NC01 (Fig. 211), while declining 47% to 78,186 kgs in NC02 (Fig. 212) and 35% to 6,096 kgs in NC03 (Fig. 213).
- Gill net effort increased 175% to 1,139 kms in NC01 (Fig. 214), while declining 24% to 1,691 kms in NC02 (Fig. 215) and remaining virtually unchanged at 218 kms in NC03 (Fig. 216).
- Trap net effort decreased from 61 to 23 nets in NC01 (Fig. 217) and from 198 to 103 nets in NC02 (Fig. 218).
- Gill net CUE increased 10% to 46 kgs/km in NC01 (Fig. 219), while declining 27% to 41 kgs/km in NC02 (Fig. 220) and 37% to 28 kgs/km in NC03 (Fig. 221).
- Trap net CUE increased 9% to 85 kgs/net in NC01 (Fig. 222) and decreased 31% to 81 kgs/net in NC02 (Fig. 223).
- Unlike previous years ages 4-6 did not dominate the catch in either the gill net or trap net fisheries (Tables 60, 61, 62).
- Abundance unexpectedly decreased in 1989 as a result of lower than predicted contribution of partially recruited age-classes (4, 5).
- Pre-recruit data from index netting and examination of releases from the trap net fishery in NC02 suggests that the 1985 year-class (age 4) was weaker than expected. Recruitment should improve in late 1990 and 1991 as the stronger 1987 year-class enters the fishery.
- Abundance should continue to drop in 1990 and start to increase in 1991.

Yellow perch

- Allocation increased 5% to 78,779 kgs in 1989.
- Harvest dropped by 23% to 30,029 kgs in 1989, 38% of the allocation (Fig. 224). Negligible harvest in NC01 (Fig. 225). Harvest dropped 40% to 4,944 kgs in NC02 (Fig. 226) and 25% to 23,884 kgs in NC03 (Fig. 227) in 1989.
- Effort remained at 188 kms in NC02 (Fig. 228) while dropping 10% to 535 kms in NC03 (Fig. 229) in 1989.
- CUE dropped 41% to 25.8 kgs/km in NC02 (Fig. 230) and 17% to 44 kgs/km in NC03 (Fig. 231) in 1989. This effectively reversed the increasing trend in abundance observed from 1986 to 1988.
- Age 3, 4,5,6 and 7 fish made up the majority of the catch in NC02 and NC03 (Tables 63, 64).
- Abundance dropped in both areas as a result of lower than predicted sub-legal biomass.
- Pre-recruit data from indexing in NC03 indicates that recruitment should improve in 1990 as the strong 1986 year-class enters the fishery. Recruitment should continue to improve in 1991 as the remainder of the 1986 year-class and the strong 1987 year-class enters the fishery.
- Abundance should hold at the 1989 level in 1989 and then increase in 1991.

Walleye

- Allocation increased 3% to 22,383 kgs in 1989.
- Harvest rose 43% to 16,416 kgs in 1989, 73% of the allocation (Fig. 232).. The harvest increased 77% to 10,474 kgs in NC01 (Fig. 233) and 86% to 3.238 kgs in NC02 (Fig. 234), while dropping 35% to 2,696 kgs in NC03 (Fig. 235).
- Effort data from are given for areas NC01 (Fig. 236), NC02 (Fig. 237) and NC03 (Fig. 238).
- CUE dropped in NC01 (Fig. 239) and NC02 (Fig. 240) while rising in NC03 (Fig. 241). Our inability to isolate effort targetted for walleye from that targetted for other species limits the use we can make of CUE as an indice of abundance.
- Few four-year-old fish suggests that 1985 year-class was relatively weak. However, stock is fairly stable with over 12 age classes contributing to the fishery (Table 65).
- Abundance should not change noticeably in NC01 in either 1990 or 1991. Insufficent information to make any predictions abount NC02 and NC03.

Lake trout backcross

- Allocation increased by 4% to 5,281 kgs in 1989.
- Harvest rose 39% to 4,625 kgs in 1989, 88% of the allocation (Fig. 242). Figures 243, 244 and 245 give the subarea breakdown of harvest.
- No abundance predictions.
- Mortality rate for lake trout backcross exceeds 60% for the North Channel well above 40% recommended.

Table 58. Round weight (kgs) and value ($) by species for management area 6-1 (NC01, NC02, NC03), 1989.

SPECIES	HARVEST	VALUE
Lake sturgeon	2087	1981
Pink salmon	5524	4623
Lake trout	4625	11597
Lake whitefish	138358	298009
Lake herring	10988	11534
Round whitefish	2816	2797
Rainbow smelt	39885	17585
Northern pike	6422	11490
Suckers	83549	5818
Carp	1039	1011
Channel catfish	341	289
Bullhead	234	253
Burbot	1067	0
Rock bass	471	0
Crappie	24	42
Yellow perch	30029	106015
Walleye	16416	70610
Discarded (mixed)	24274	49

Table 59. Round weight and quota in kilograms by species for management area 6-1 (NC01, NC02, NC03), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	138358	243007	56.9
Yellow perch	30029	78779	38.1
Walleye	16416	22383	73.3
Lake trout/backross	4625	5281	87.6
Northern pike	6422	18888	34.0
Pink salmon	5524	71871	7.7
Sturgeon	2087	8001	26.1
Channel catfish	341	999999	0.0

Figure 210. Lake whitefish harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.

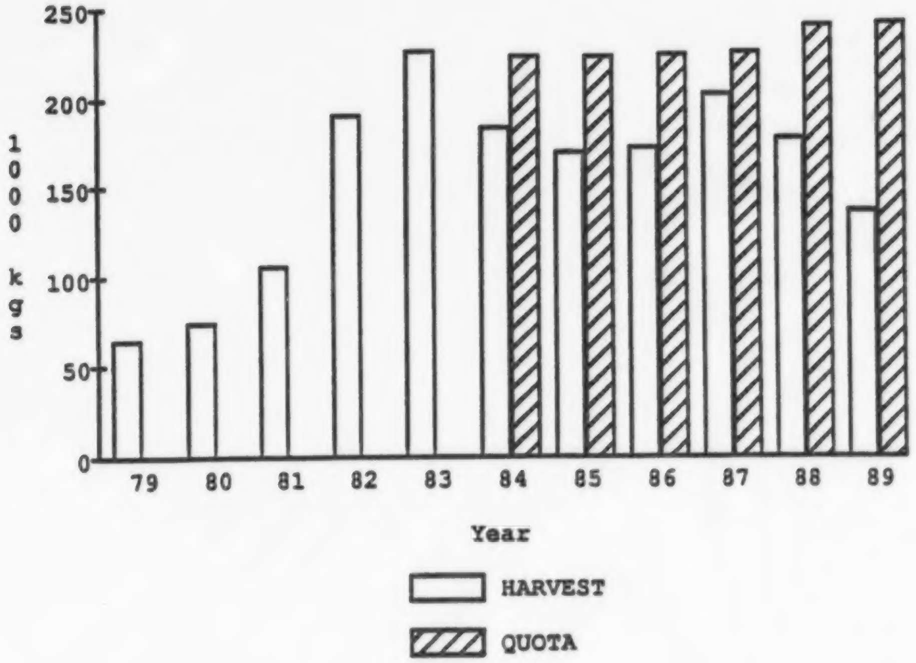


Figure 211. Lake whitefish harvest in kilograms for assessment area NC01 (subarea of management area 6-1), 1979 - 1989.

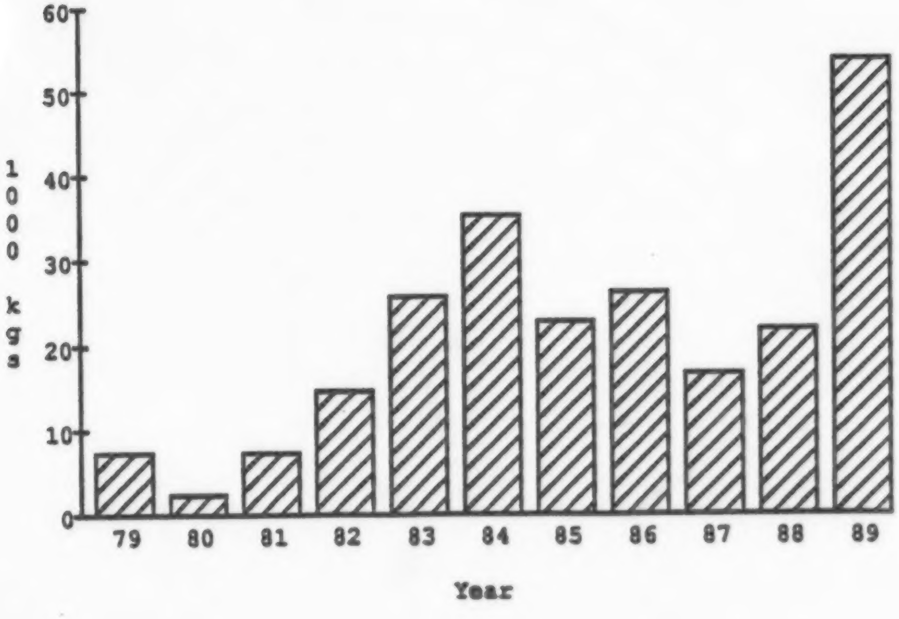


Figure 212. Lake whitefish harvest in kilograms for assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

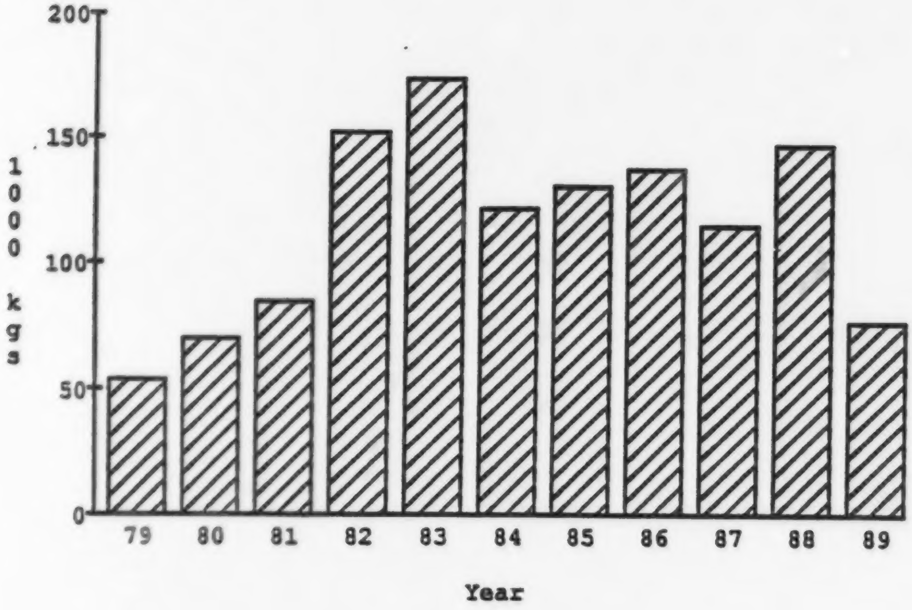


Figure 213. Lake whitefish harvest in kilograms for assessment area NC03 (subarea of management area 6-1), 1979 - 1989.

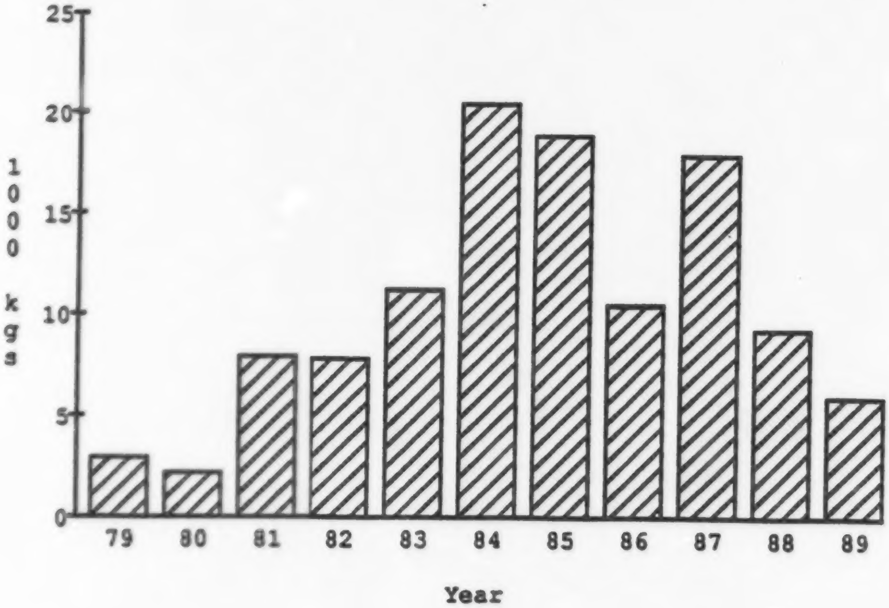


Figure 214. Annual gill net effort (km) for lake whitefish in assessment area NC01 (subarea of management area 6-1), 1979 - 1989.

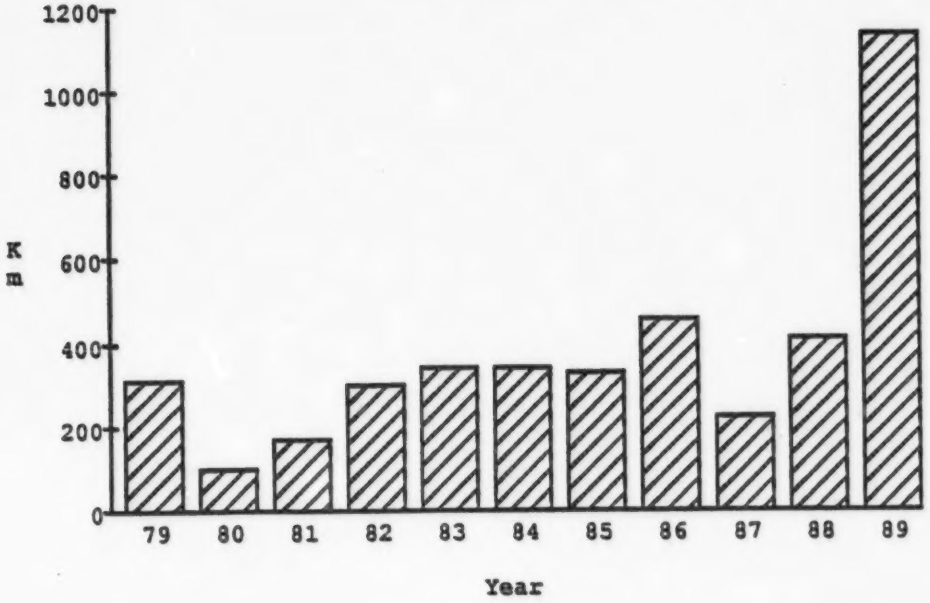


Figure 215. Annual gill net effort (km) for lake whitefish in assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

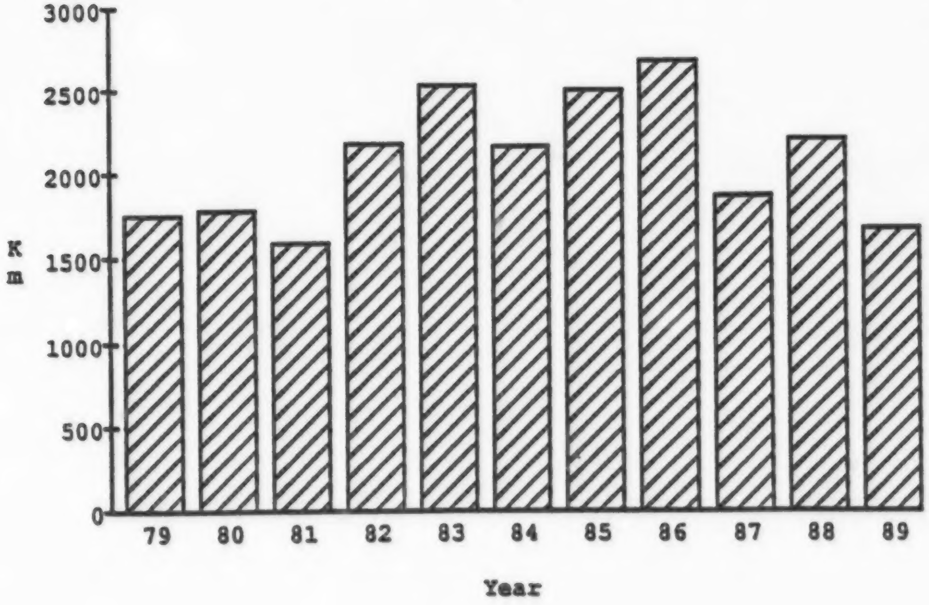


Figure 216. Annual gill net effort (km) for lake whitefish in assessment area NC03 (subarea of management area 6-1), 1979 - 1989.

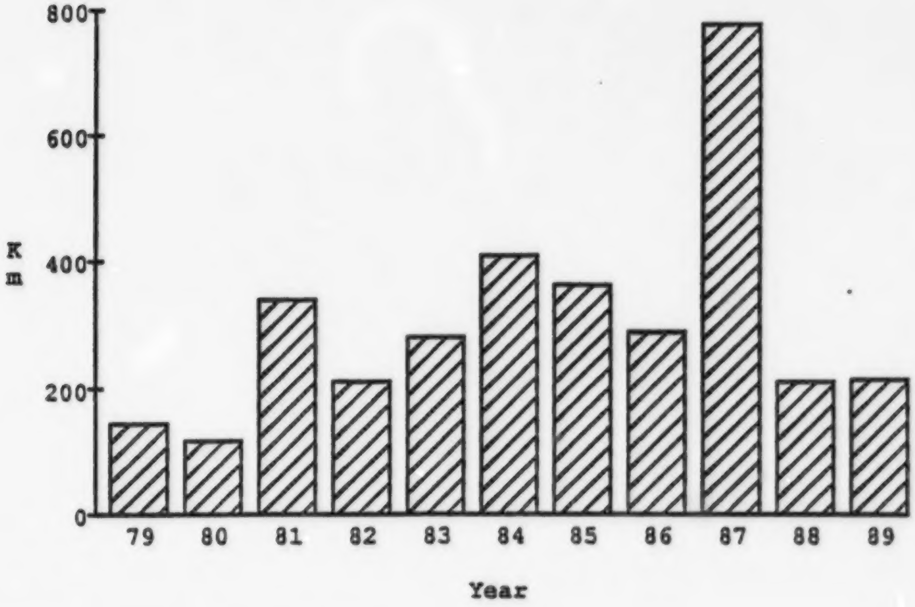


Figure 217. Annual trap net effort (# of nets) for lake whitefish in assessment area NC01 (subarea of management area 6-1), 1979 - 1989.

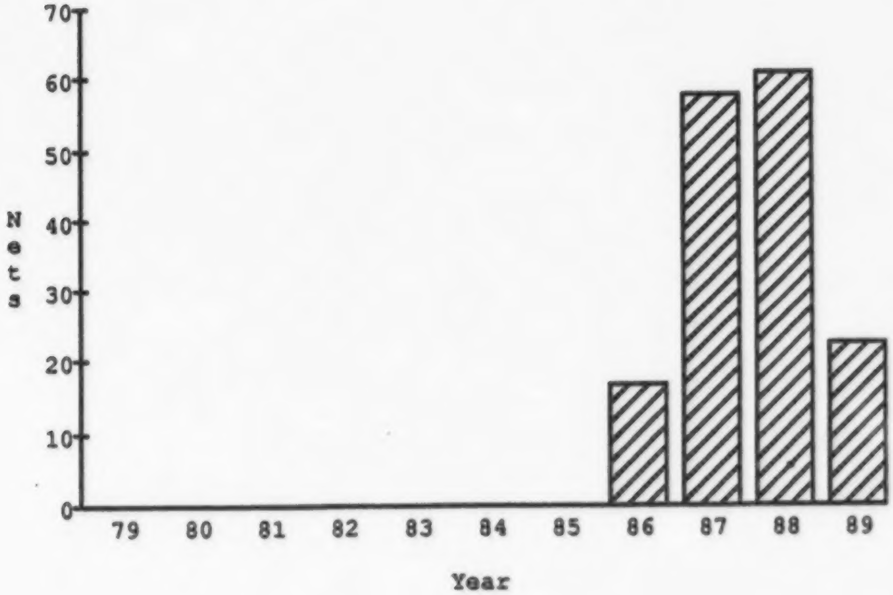


Figure 218. Annual trap net effort (# of nets) for lake whitefish in assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

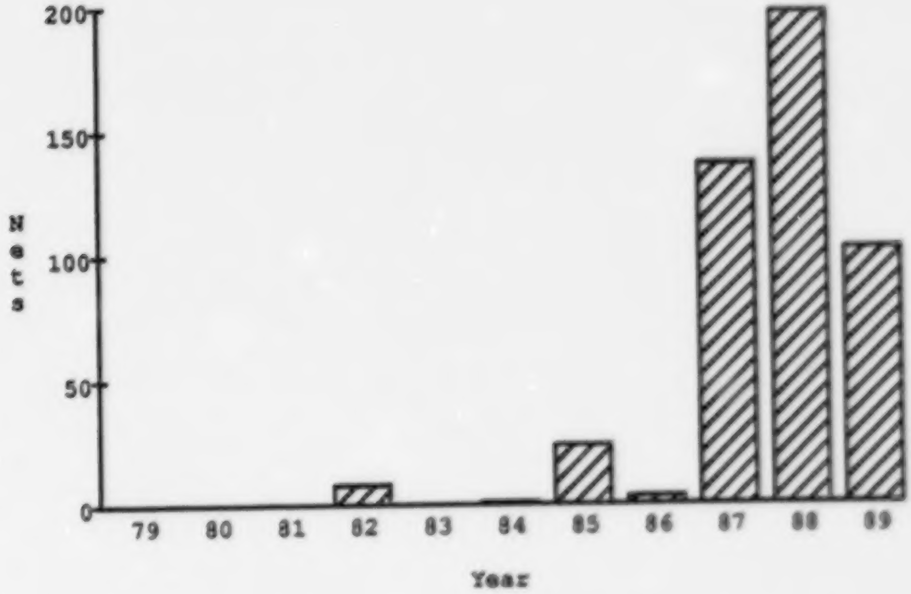


Figure 219. Lake whitefish gill net CUEs (kgs/km) for assessment area NC01 (subarea of management area 6-1), 1979 - 1989.

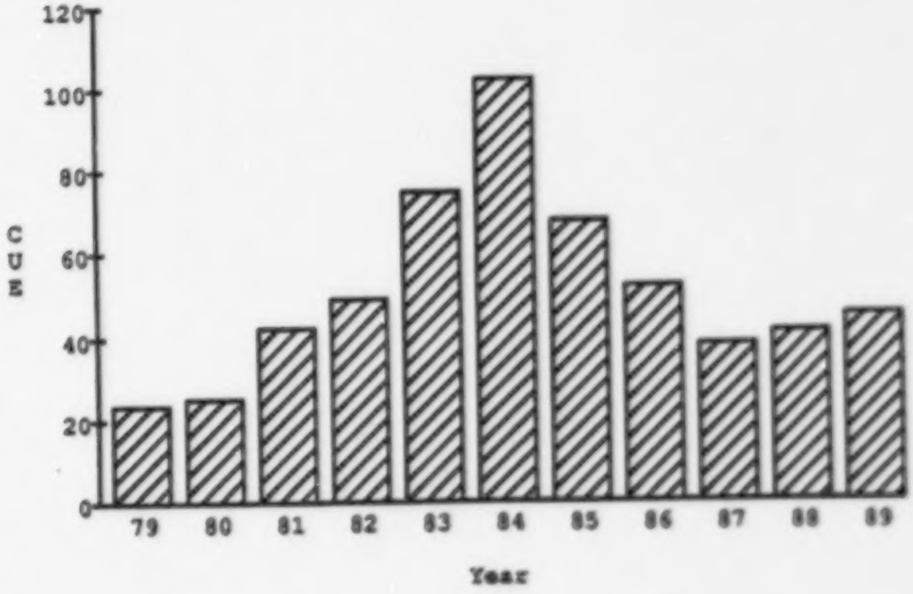


Figure 220. Lake whitefish gill net CUEs (kgs/km) for assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

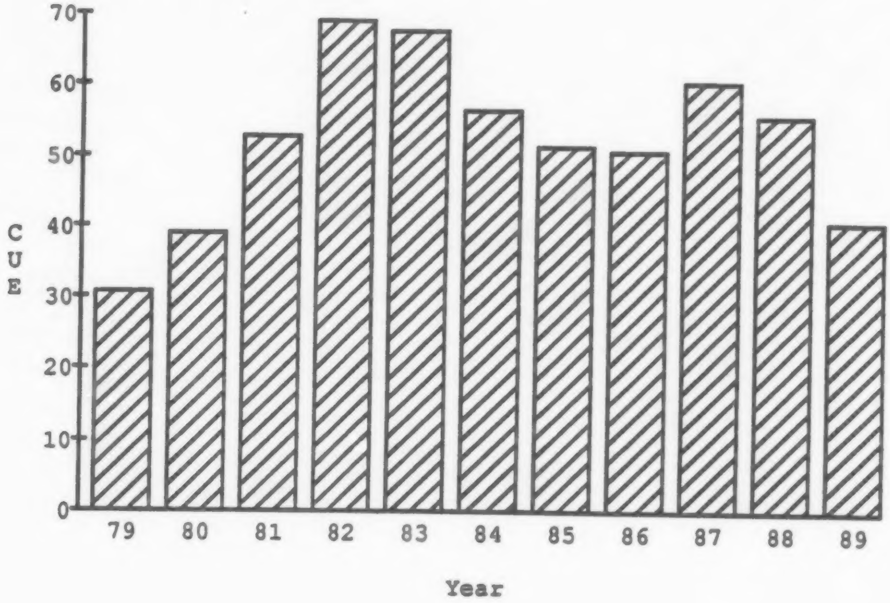


Figure 221. Lake whitefish trap net CUEs (kgs/net) for assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

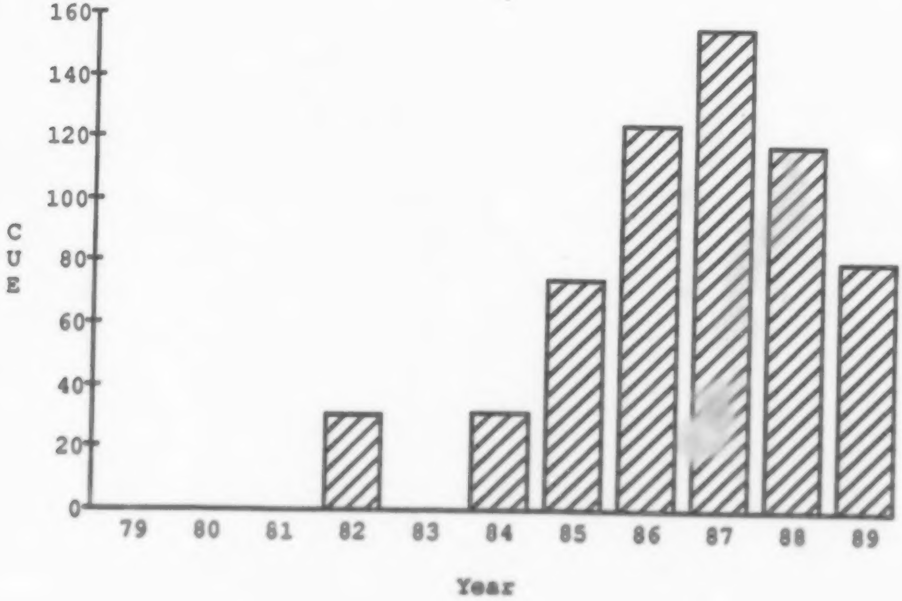


Figure 222. Lake whitefish trap net CUEs (kgs/net) for assessment area NC01 (subarea of management area 6-1), 1979 - 1989.

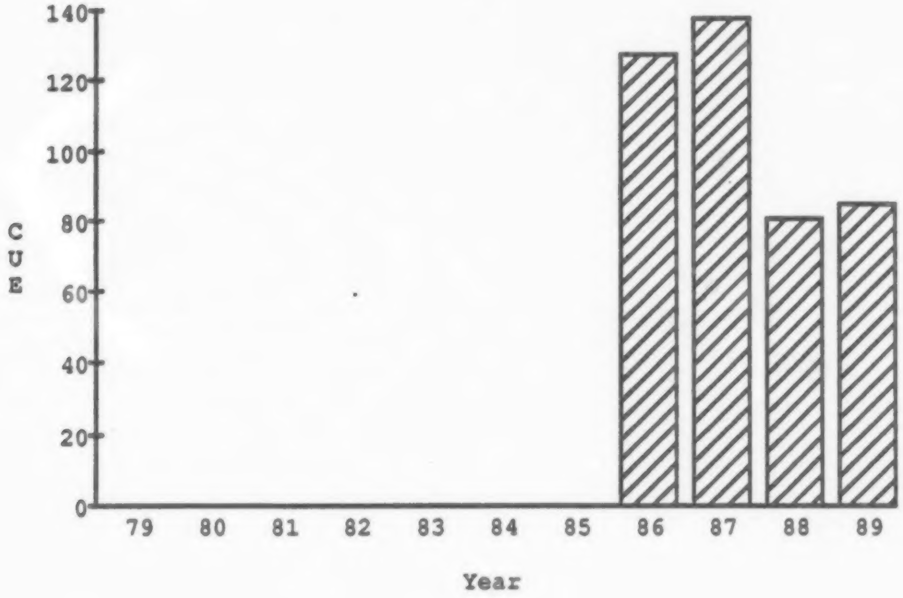


Figure 223. Lake whitefish gill net CUEs (kgs/km) for assessment area NC03 (subarea of management area 6-1), 1979 - 1989.

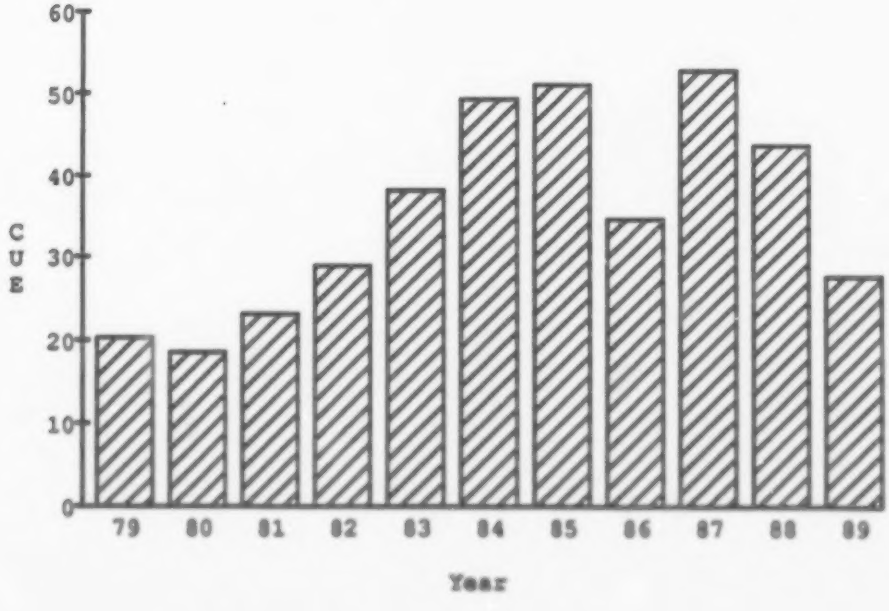


Table 60. Age-class composition of lake whitefish caught in gill nets in assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

AGE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	243
3	2046	2195	419	0	2231	7128	4617	5183	3591	2762	9679
4	8554	19194	25125	7325	9670	26303	28152	55283	22841	29131	6504
5	12236	6465	14844	79375	44748	21501	28626	23657	38994	30001	17071
6	8494	8662	4511	7025	50912	13942	14971	10063	13888	17101	8976
7	2386	10926	5245	3011	5458	9598	8711	3225	3741	4804	3571
8	561	2213	1784	1806	1114	1621	4280	834	1470	750	767
9	279	536	106	1505	1114	897	557	371	180	0	313
10	293	85	210	0	320	411	495	212	30	0	179
11	239	85	106	301	0	637	434	82	30	0	0
12	14	0	0	0	0	215	743	0	0	0	0
13	94	85	106	0	0	0	0	0	0	0	0
>13	14	0	0	0	0	108	186	0	0	0	0

Table 61. Age-class composition of lake whitefish caught in trap nets in assessment area NC02 (subarea of management area 6-1), 1987 - 1989.

AGE	1987	1988	1989
1	0	0	0
2	0	101	66
3	204	663	617
4	3089	5997	779
5	5416	8080	2030
6	4828	3399	1969
7	2304	709	612
8	548	936	154
9	0	0	245
10	0	0	48
11	0	0	0
12	47	0	10
13	0	0	0
>13	0	0	0

Table 62. Age-class composition of lake whitefish caught in gill nets in assessment area NC03 (subarea of management area 6-1), 1984 - 1989.

AGE	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	0
2	7	0	0	0	0	0
3	2306	1676	479	764	59	567
4	5697	6754	4225	7510	2773	680
5	9687	2242	1719	8741	2408	823
6	4085	1157	332	5590	452	677
7	1898	413	408	960	118	450
8	505	184	68	714	0	129
9	472	106	0	345	0	24
10	472	47	0	0	59	66
11	232	28	0	0	0	0
12	0	18	0	0	0	0
13	232	0	0	0	0	0
>13	0	18	0	0	0	0

Figure 224. Yellow perch harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.

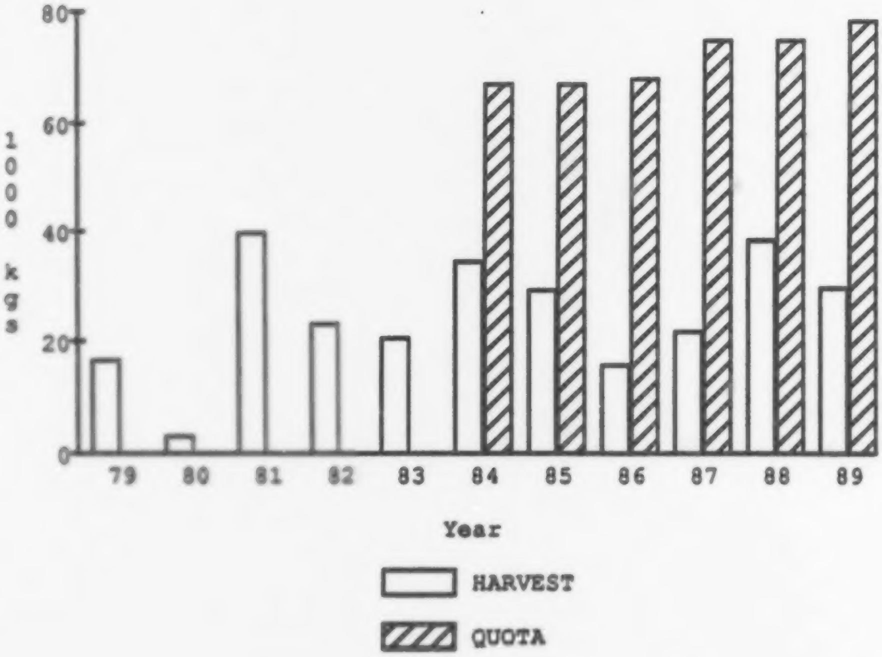


Figure 225. Yellow perch harvest in kilograms for assessment area NC01 (subarea of management area 6-1), 1979 - 1989.

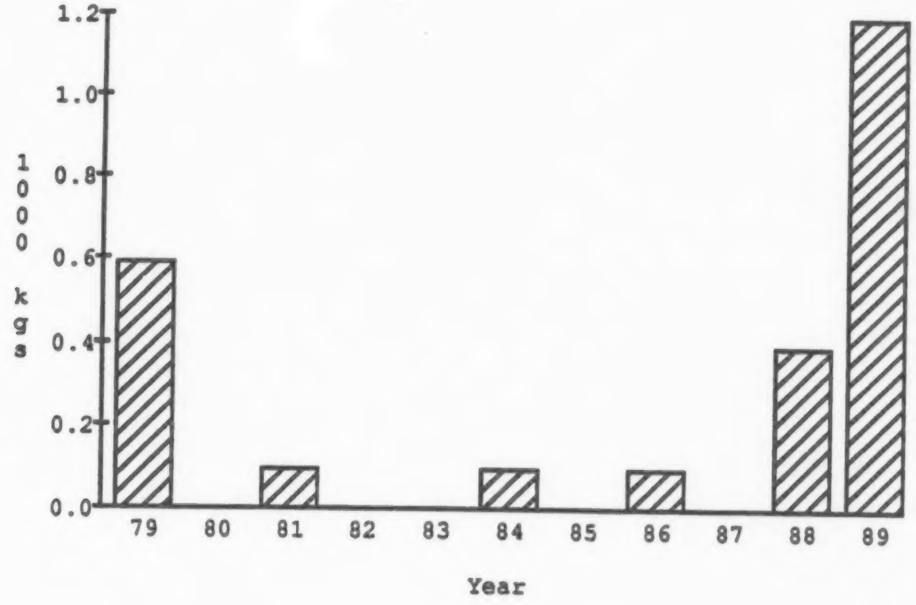


Figure 226. Yellow perch harvest in kilograms for assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

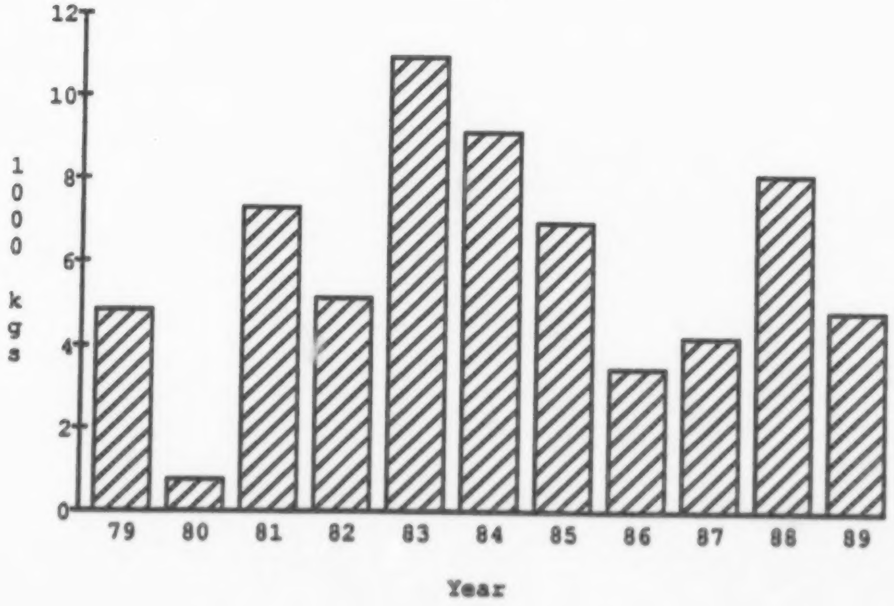


Figure 227. Yellow perch harvest in kilograms for assessment area NC03 (subarea of management area 6-1), 1979 - 1989.

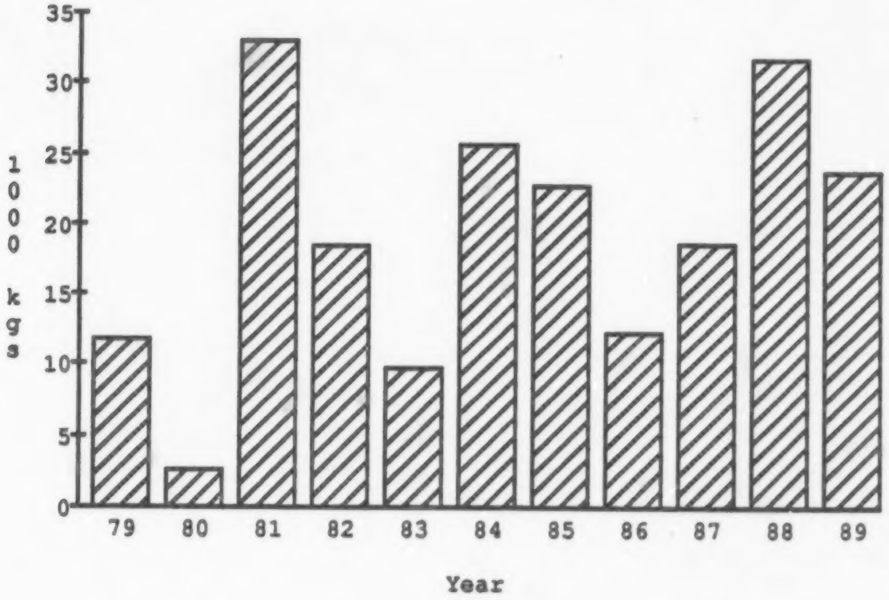


Figure 228. Annual gill net effort (km) for yellow perch in assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

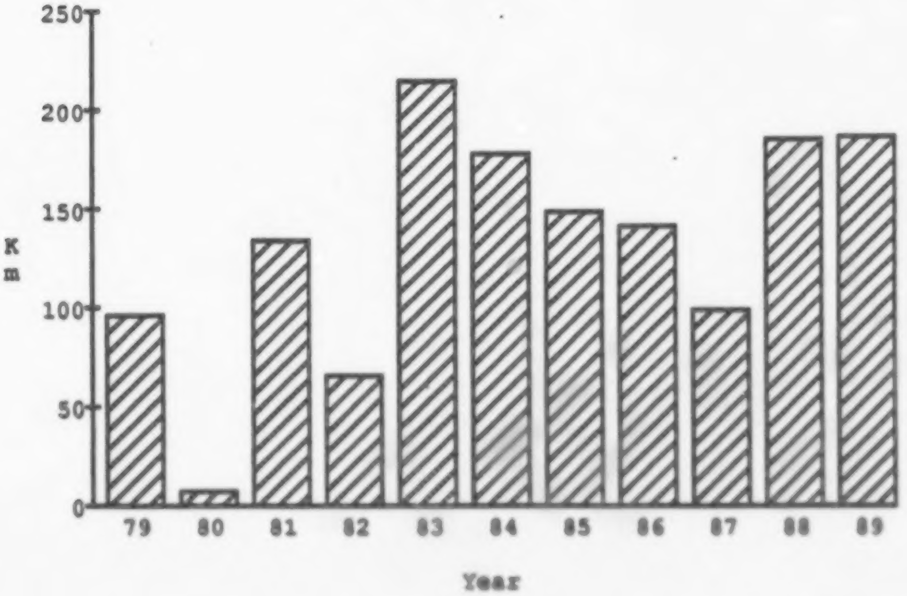


Figure 229. Annual gill net effort (km) for yellow perch in assessment area NC03 (subarea of management area 6-1), 1979 - 1989.

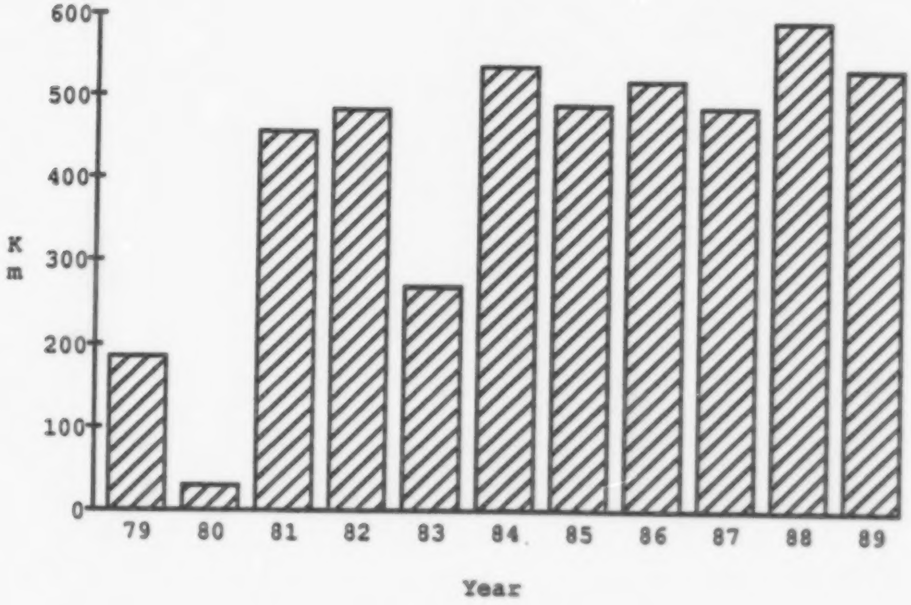


Figure 230. Yellow perch gill net CUEs (kgs/km) for assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

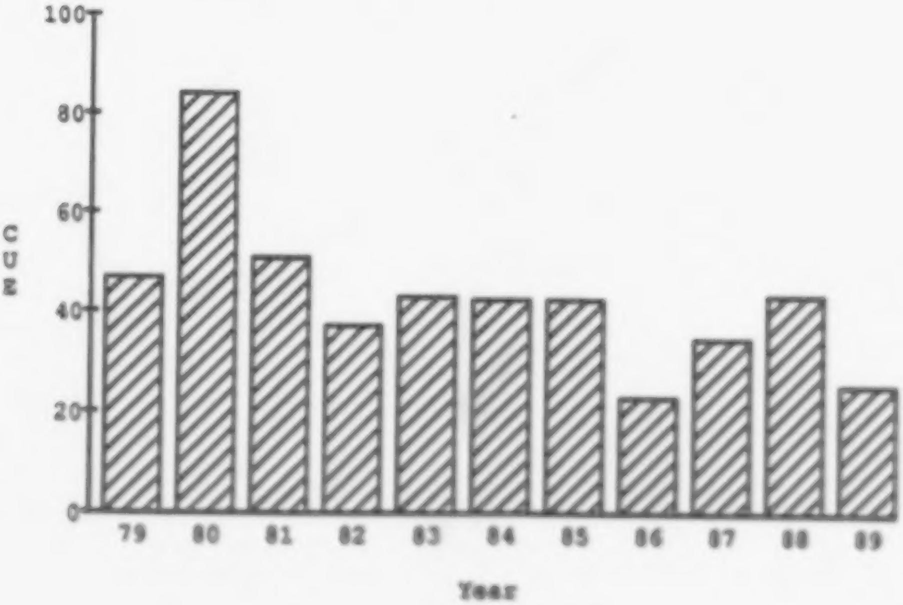


Figure 231. Yellow perch gill net CUEs (kgs/km) for assessment area NC03 (subarea of management area 6-1), 1979 - 1989.

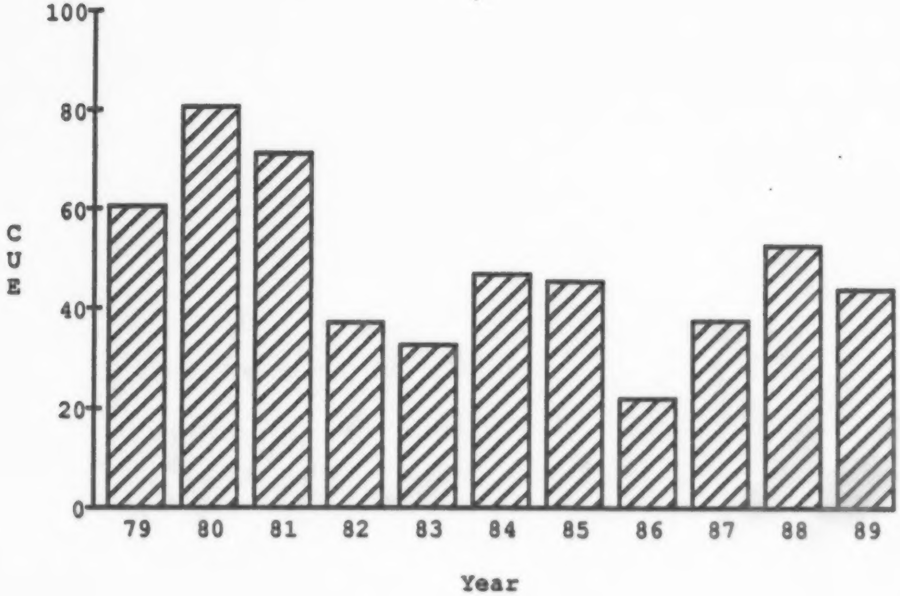


Table 63. Age-class composition of yellow perch caught in gill nets in assessment area NC02 (subarea of management area 6-1), 1984 - 1989.

AGE	1984	1985	1986	1987	1988	1989
1	0	0	0	0	0	0
2	0	0	0	0	0	702
3	780	2511	155	7	0	1681
4	7289	6338	1844	237	1608	4005
5	19283	12020	4658	3440	7570	9995
6	9436	11490	5794	9734	16532	4955
7	4806	3927	4164	6971	13163	3816
8	923	305	1581	1667	887	1271
9	71	159	30	0	733	274
10	0	0	0	61	0	176
11	0	0	0	61	0	0
12	0	0	0	0	0	196
13	0	0	124	0	0	0
>13	0	0	0	0	0	0

Table 64. Age-class composition of yellow perch caught in gill nets in assessment area NC03 (subarea of management area 6-1), 1982 - 1989.

AGE	1982	1983	1984	1985	1986	1987	1988	1989
1	0			0	0	0	0	0
2	0			0	0	0	0	903
3	801			2689	2348	260	4046	25477
4	3743			18467	11713	41026	28208	70650
5	7432			40268	12121	34846	69761	21365
6	28065			28373	14583	7743	30046	12609
7	29757			4100	12080	6444	7129	2822
8	8356			4316	2363	915	1896	433
9	385			1937	258	632	2594	282
10	0			1452	269	0	0	0
11	0			753	0	0	0	0
12	0			0	179	0	0	0
13	0			0	0	0	0	0
>13	0			0	0	0	0	0

Figure 232. Walleye harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.

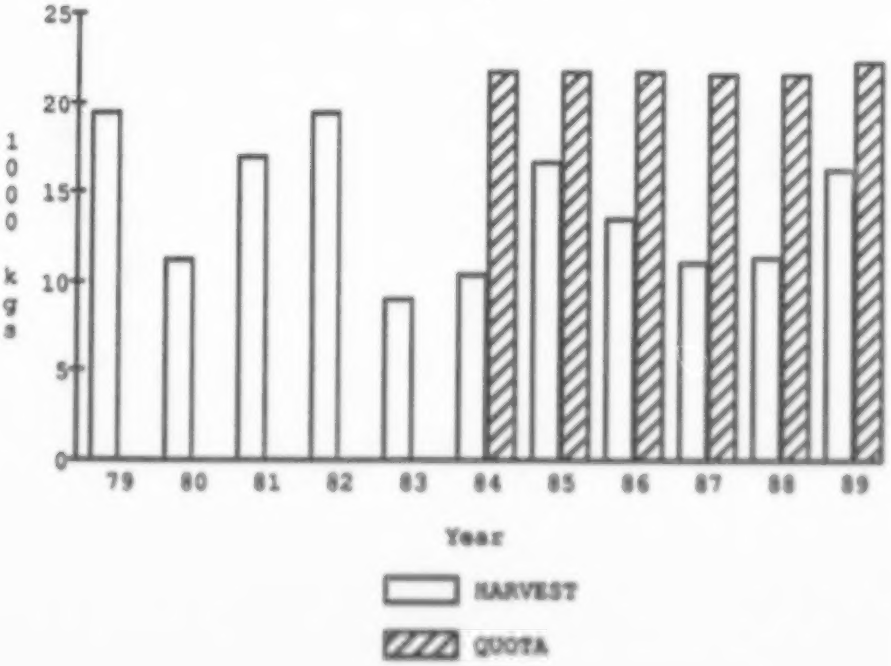


Figure 233. Walleye harvest in kilograms for assessment area NC01 (subarea of management area 6-1), 1979 - 1989.

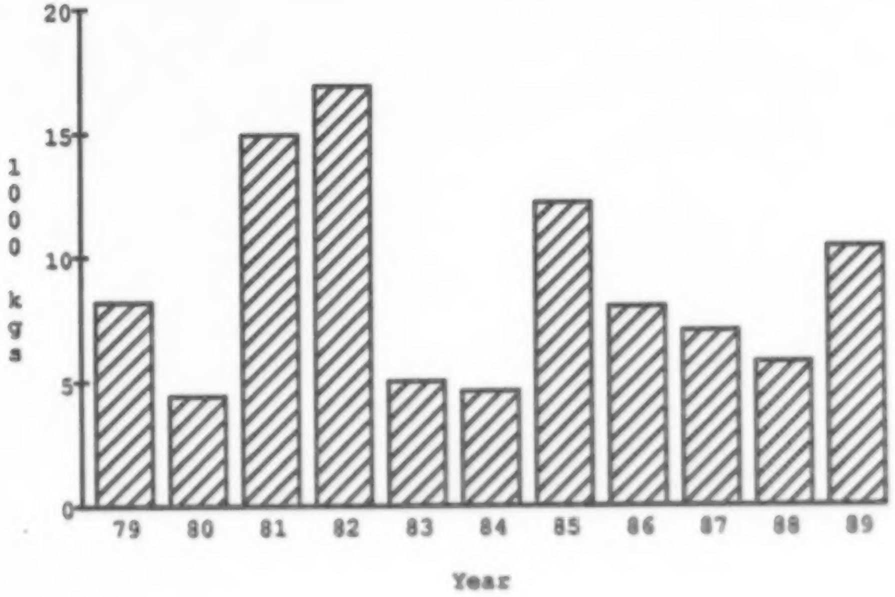


Figure 234. Walleye harvest in kilograms for assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

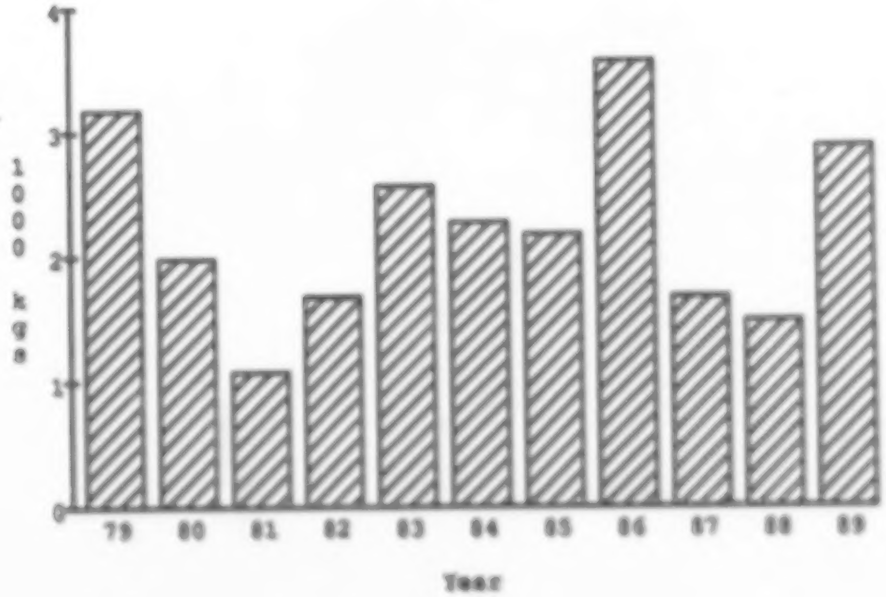


Figure 235. Walleye harvest in kilograms for assessment area NC03 (subarea of management area 6-1), 1979 - 1989.

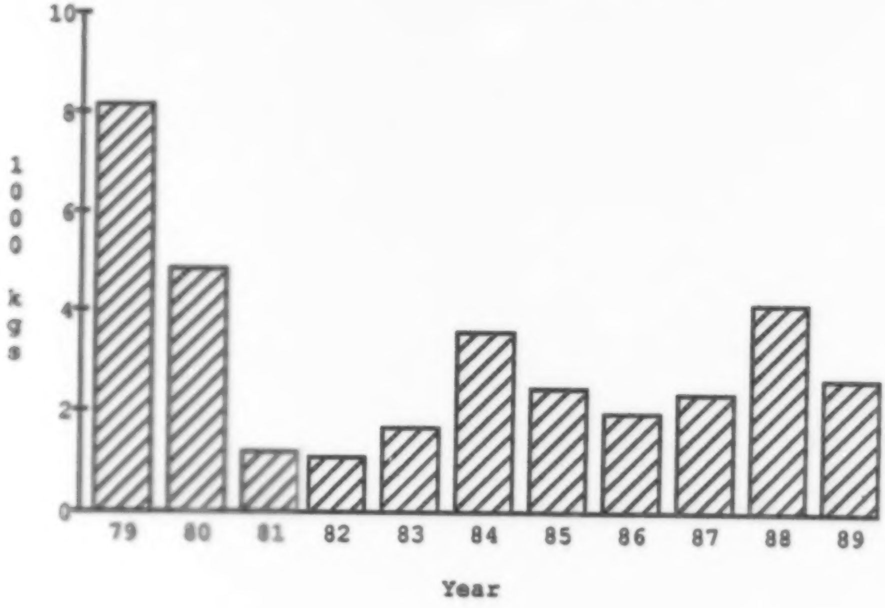


Figure 236. Annual gill net effort (km) for walleye in assessment area NC01 (subarea of management area 6-1), 1979 - 1989.

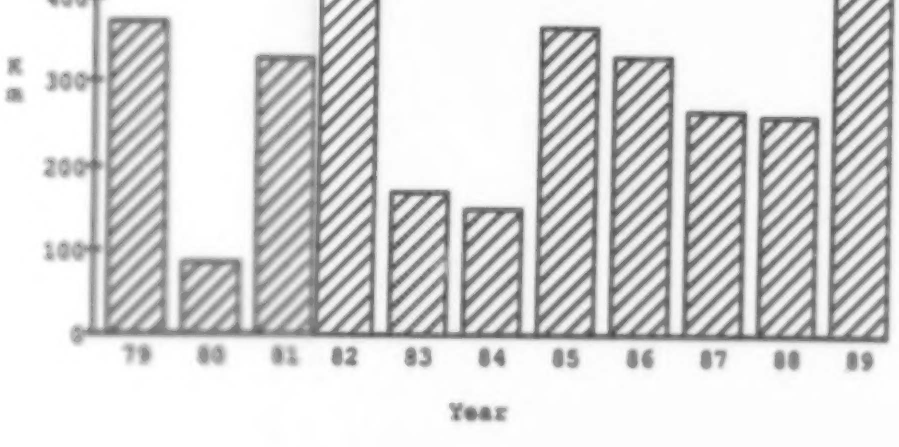


Figure 237. Annual gill net effort (km) for walleye in assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

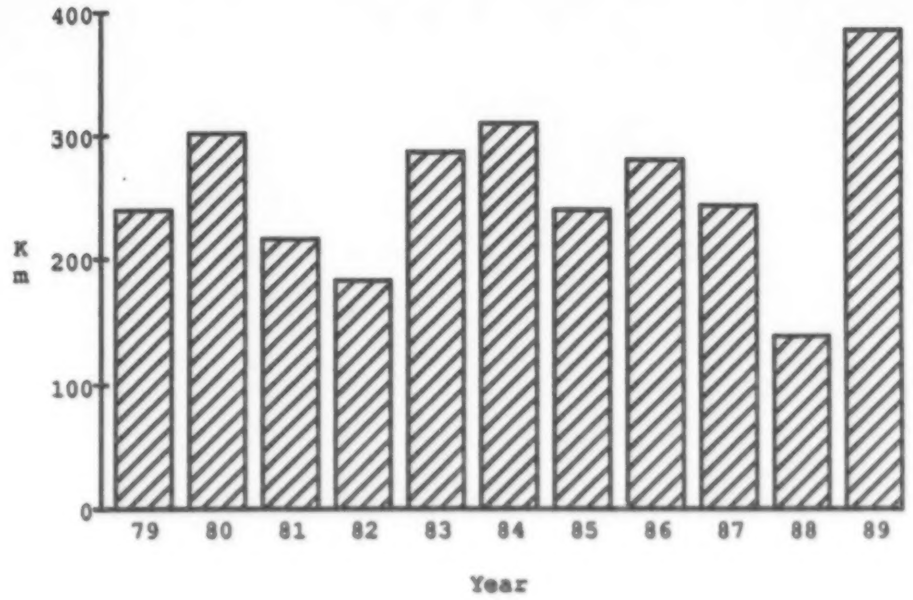


Figure 238. Annual gill net effort (km) for walleye in assessment area NC03 (subarea of management area 6-1), 1979 - 1989.

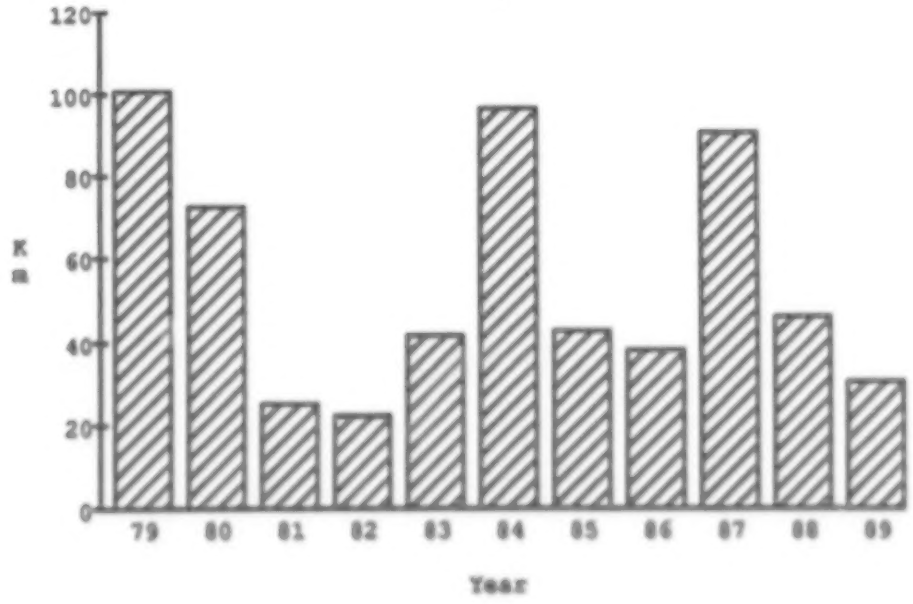


Figure 239. Walleye gill net CUEs (kgs/km) for assessment area NC01 (subarea of management area 6-1), 1979 - 1989.

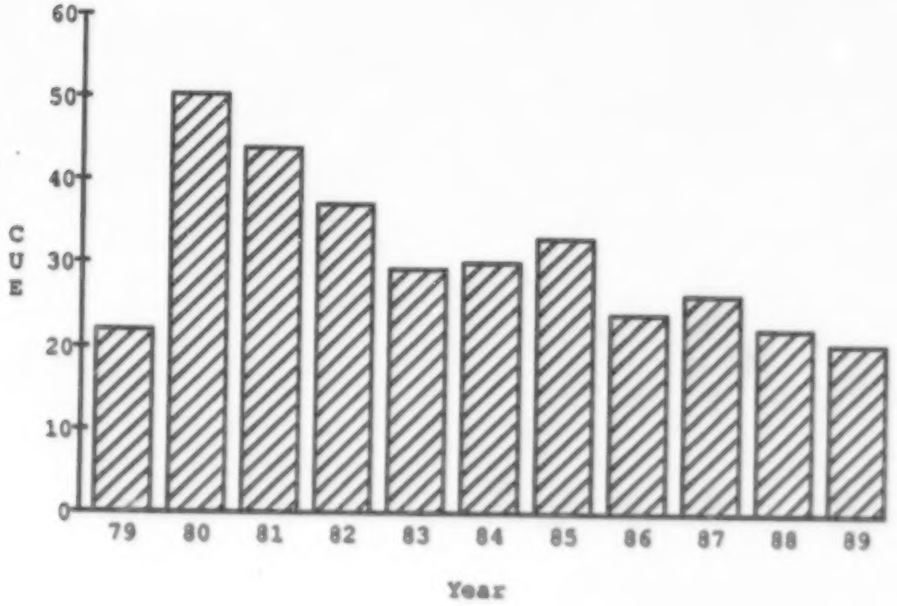


Figure 240. Walleye gill net CUEs (kgs/km) for assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

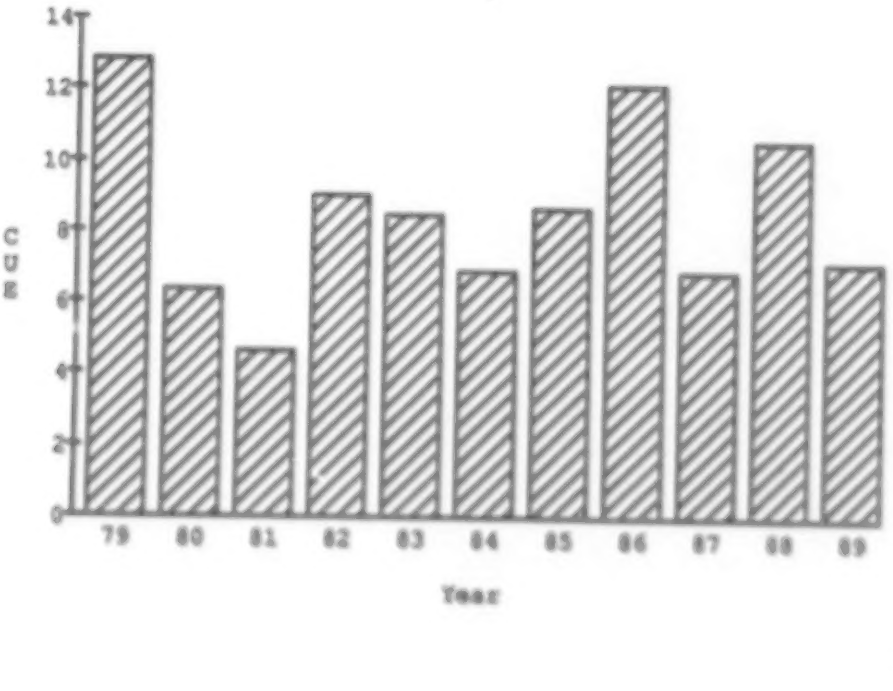


Figure 241. Walleye gill net CUEs (kgs/km) for assessment area NC03 (subarea of management area 6-1), 1979 - 1989.

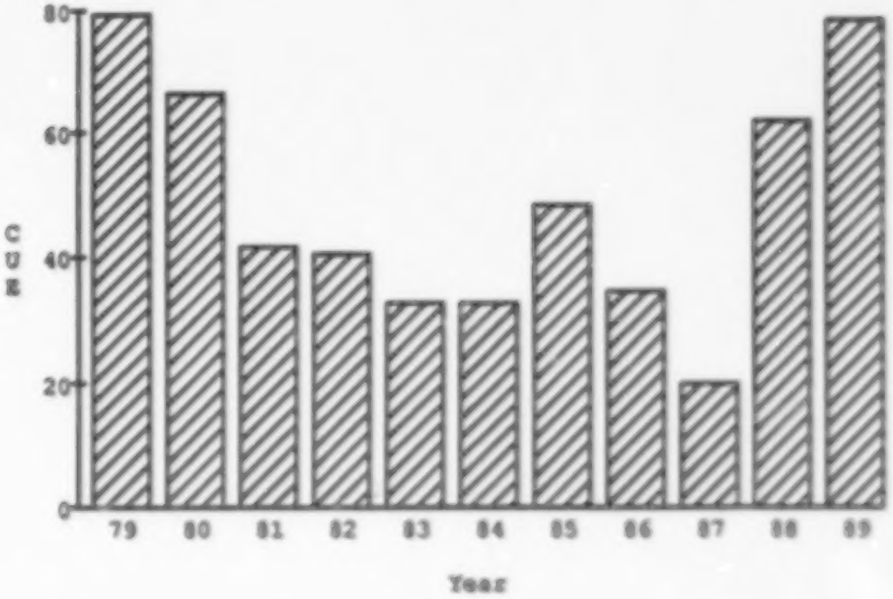


Table 65. Age-class composition of walleye caught in gill nets in assessment area NC01 (subarea of management area 6-1), 1984 - 1989.

AGE	1984	1985	1986	1987	1988	1989
1	0	0	0		0	0
2	0	0	0		94	0
3	0	0	0		0	37
4	82	317	15		436	53
5	418	1563	583		578	1183
6	857	1635	1230		1607	597
7	621	2800	1647		891	1684
8	267	1635	1431		245	1012
9	196	560	473		65	520
10	163	164	96		8	728
11	225	164	52		125	297
12	132	36	46		27	332
13	76	81	133		6	148
>13	148	81	0		15	73

Figure 242. Lake trout/backcross harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.

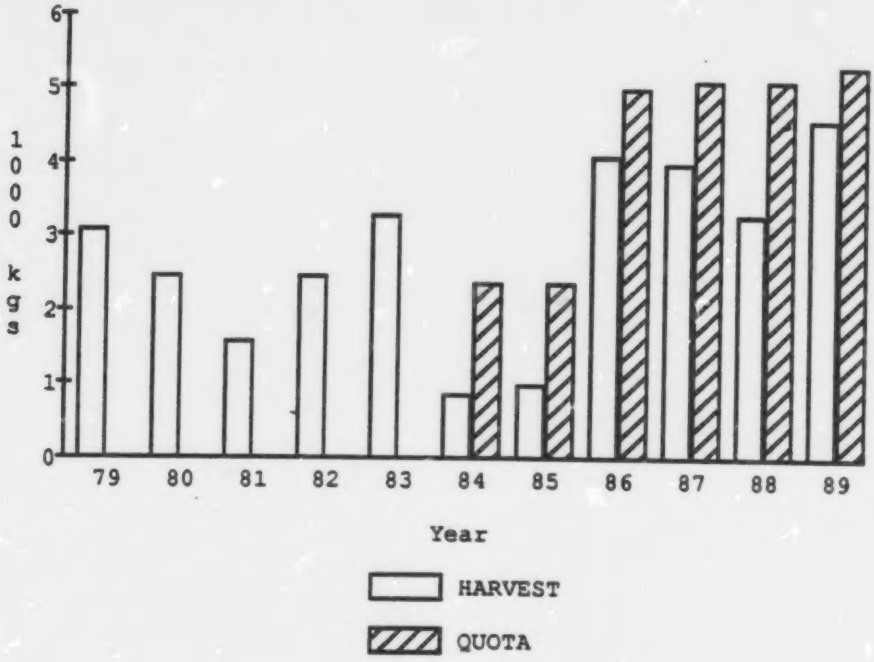


Figure 243. Lake trout/backcross harvest in kilograms for assessment area NC01 (subarea of management area 6-1), 1979 - 1989.

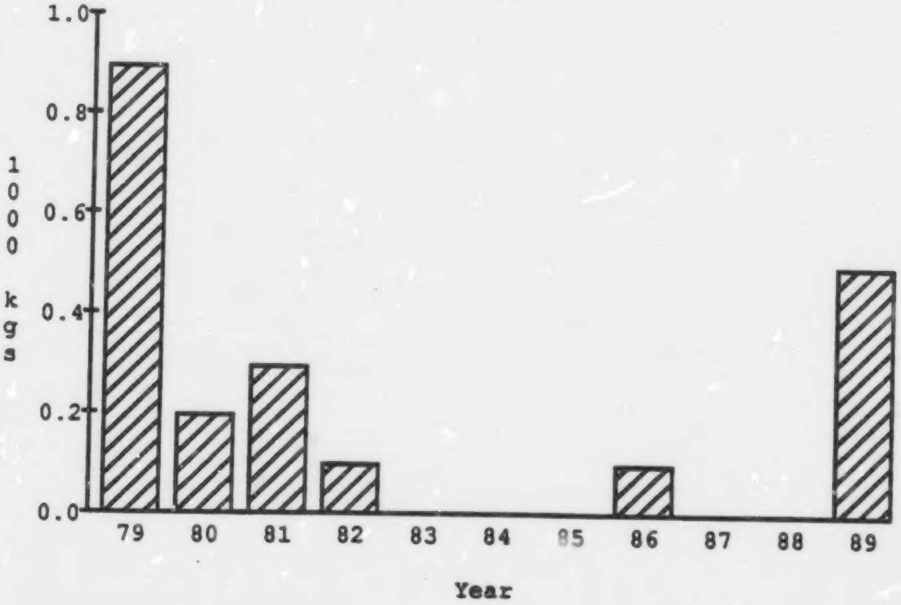


Figure 244. Lake trout/backcross harvest in kilograms for assessment area NC02 (subarea of management area 6-1), 1979 - 1989.

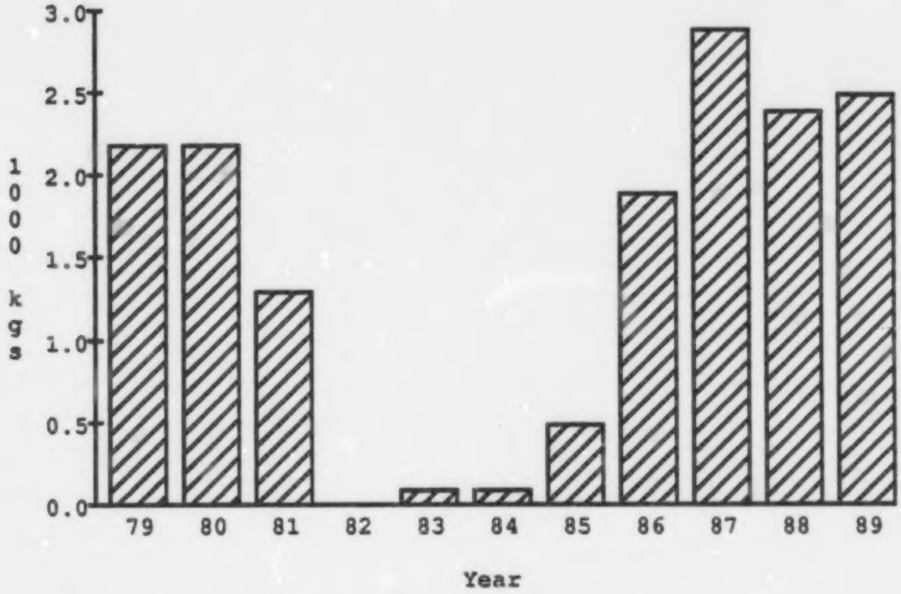


Figure 245. Lake trout/backcross harvest in kilograms for assessment area NC03 (subarea of management area 6-1), 1979 - 1989.

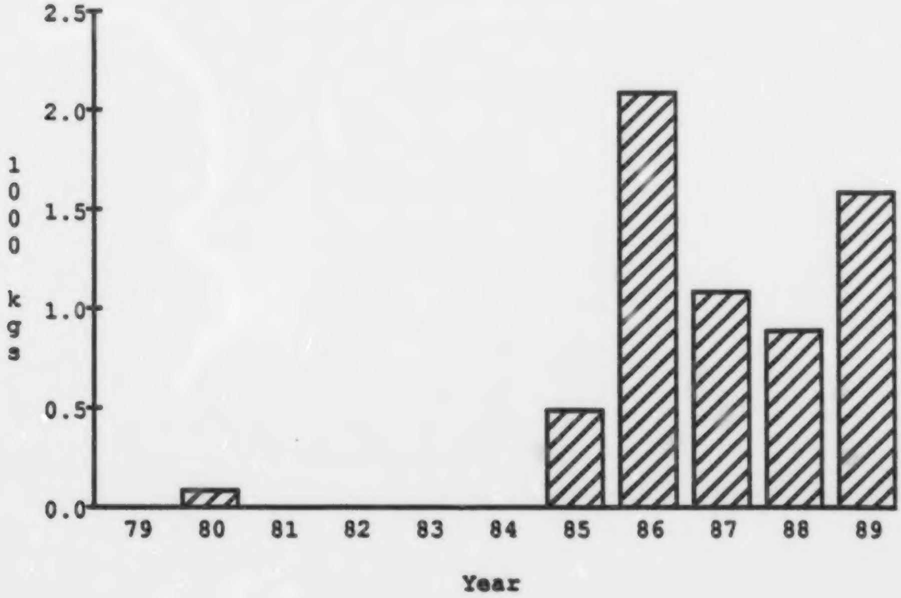


Figure 246. Northern pike harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.

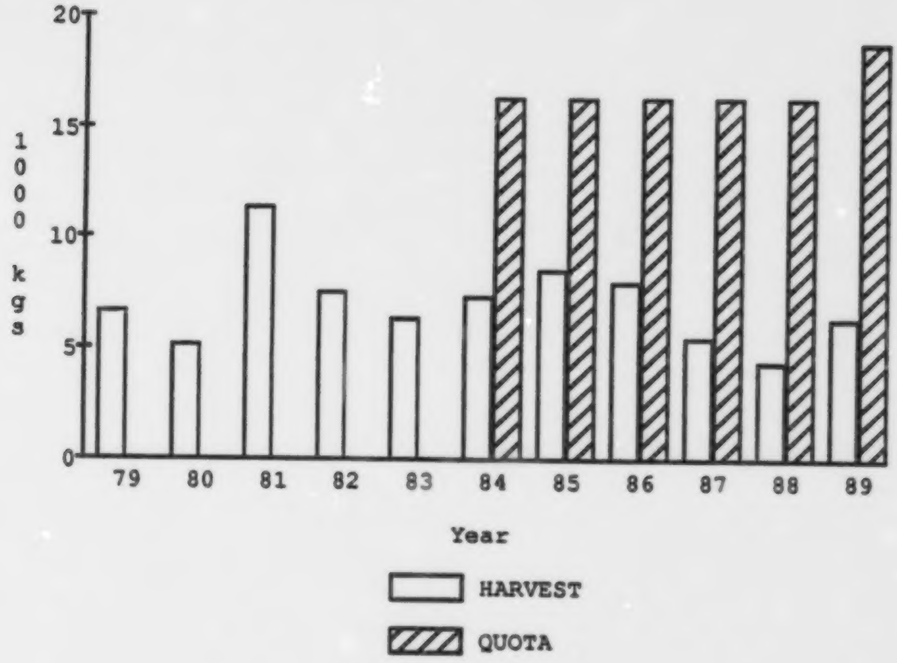
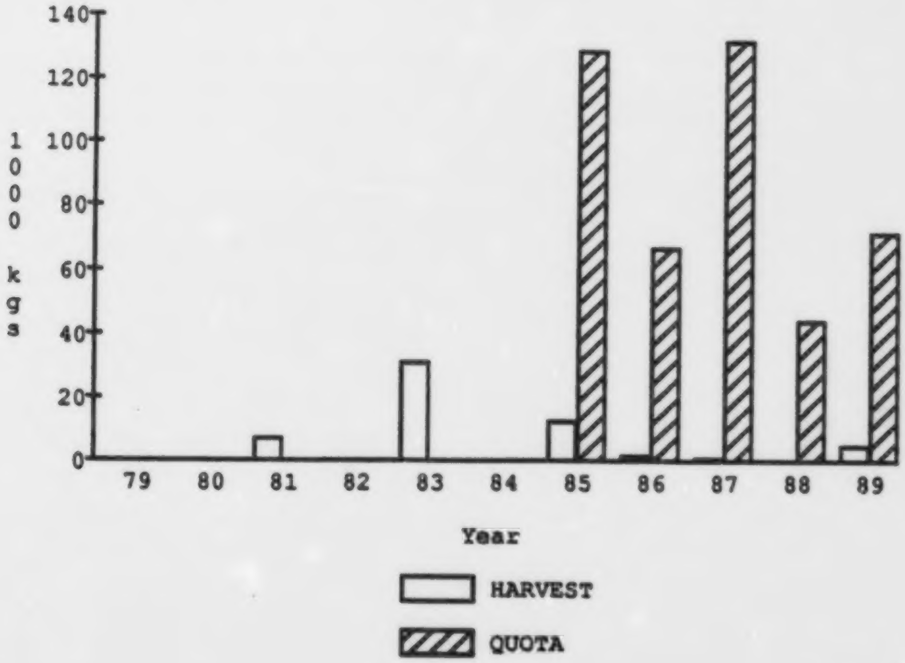


Figure 247. Pink salmon harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.



MANAGEMENT AREA 6-2

Lake Whitefish

- Allocation dropped from 2388 kgs to 114 kgs in 1989.
- Harvest dropped from 4676 to 2591 kgs in 1989 (Fig. 248). This is approximately 23 times the allocation.
- Effort remained constant at 58 kms (Fig. 249).
- CUE dropped 23% to 44 kgs/km in 1989 indicating declining abundance (Fig. 250).

Yellow perch

- Allocation dropped 63% to 2602 kgs in 1989.
- Harvest dropped 24% to 8,889 kgs in 1989, approximately 342% of the allocation (Fig. 251).
- Effort stayed constant at 76 kms in 1989 (Fig. 252).
- CUE dropped 19% to 106 kgs/km in 1989 (Fig. 253).
- Pulse in abundance in 1988 may be due in part to a reduction in the minimum mesh size for yellow perch. However, the drop in CUE in 1989 is viewed as a real reduction in abundance.
- Pre-recruit data from indexing in NC03 indicates that recruitment should improve in 1990 as the strong 1986 year-class enters the fishery. Recruitment should continue to improve in 1991 as the remainder of the 1986 year-class and the strong 1987 year-class enters the fishery.

Lake trout backcross

- Harvest continues to stay well above allocation (Fig. 254).
- CUE continues to increase indicating increasing abundance (Fig. 255).

Comment

- Practice of allowing fishermen to take part of their 6-1 quota in 6-2 is making it difficult to interpret data.

Table 66. Round weight (kgs) and value ($) by species for management area 6-2 (NC04), 1989.

SPECIES	HARVEST	VALUE
Lake sturgeon	1531	1817
Lake trout	1356	3513
Lake whitefish	2591	5578
Lake herring	287	392
Round whitefish	12	17
Northern pike	417	672
Suckers	3474	360
Channel catfish	4	0
Bullhead	68	0
Burbot	256	0
Rock bass	371	0
Yellow perch	8889	28797
Walleye	6	36
Discarded (mixed)	122	0

Table 67. Round weight and quota in kilograms by species for management area 6-2 (NC04), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	2591	114	2272.8
Yellow perch	8889	2602	341.6
Walleye	6	0	0.0
Lake trout/backross	1356	114	1189.5
Northern pike	417	522	79.9
Pink salmon	0	1136	0.0
Sturgeon	1531	0	0.0
Channel catfish	4	455	0.9

Figure 248. Lake whitefish harvest and quota in kilograms for management area 6-2 (NC04), 1979 - 1989.

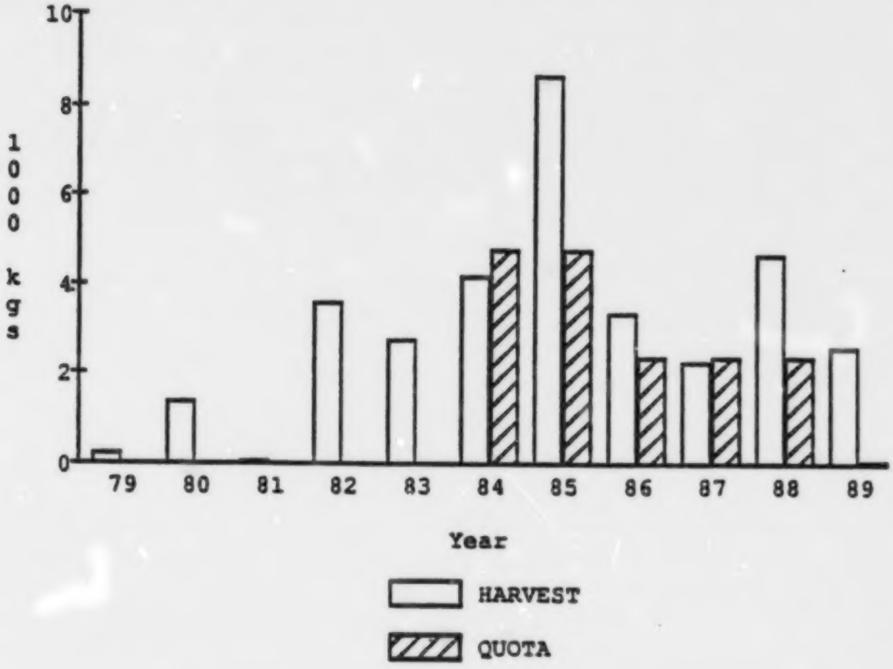


Figure 249. Annual gill net effort (km) for lake whitefish in management area 6-2 (NC04), 1979 - 1989.

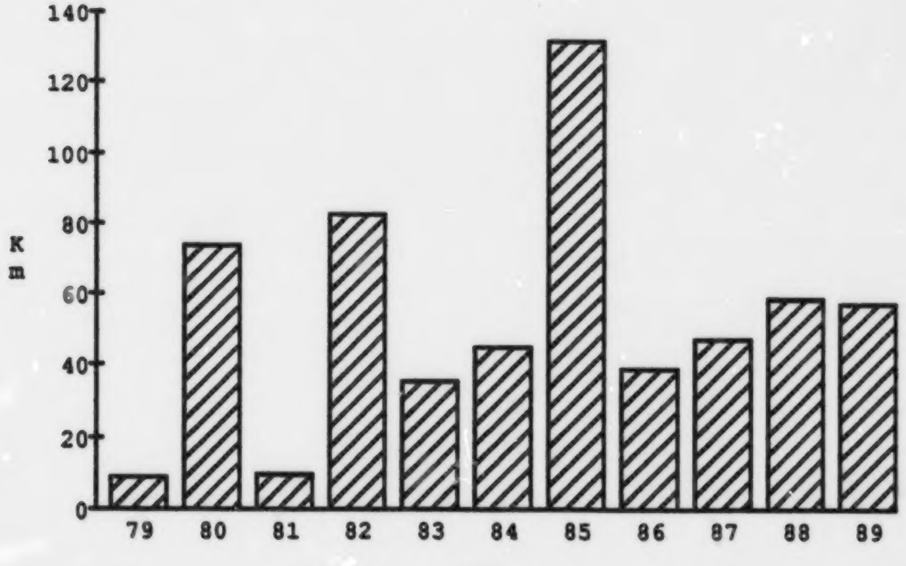


Figure 250. Lake whitefish gill net CUEs (kg/1000 m) for management area 6-2 (NC04), 1979 - 1989.

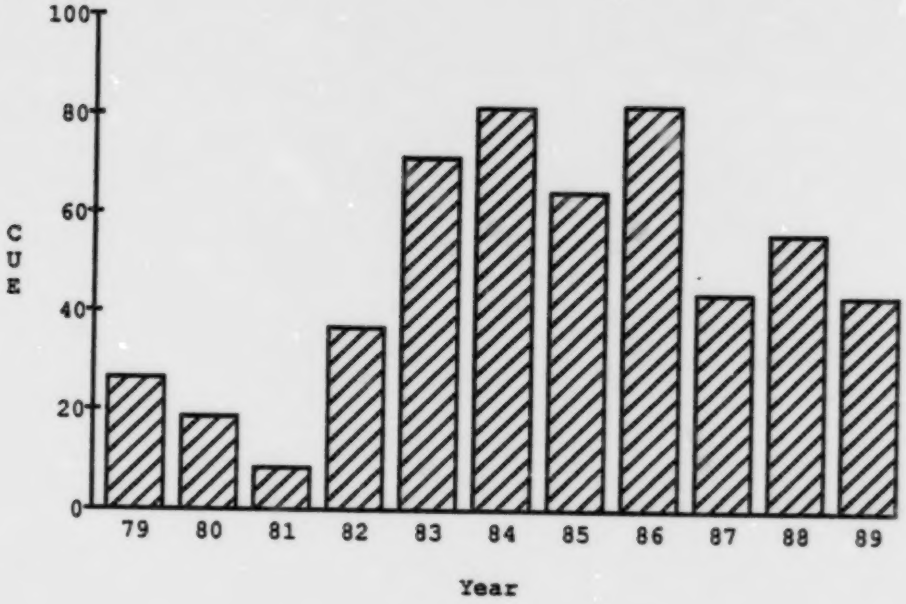


Figure 251. Yellow perch harvest and quota in kilograms for management area 6-2 (NC04), 1979 - 1989.

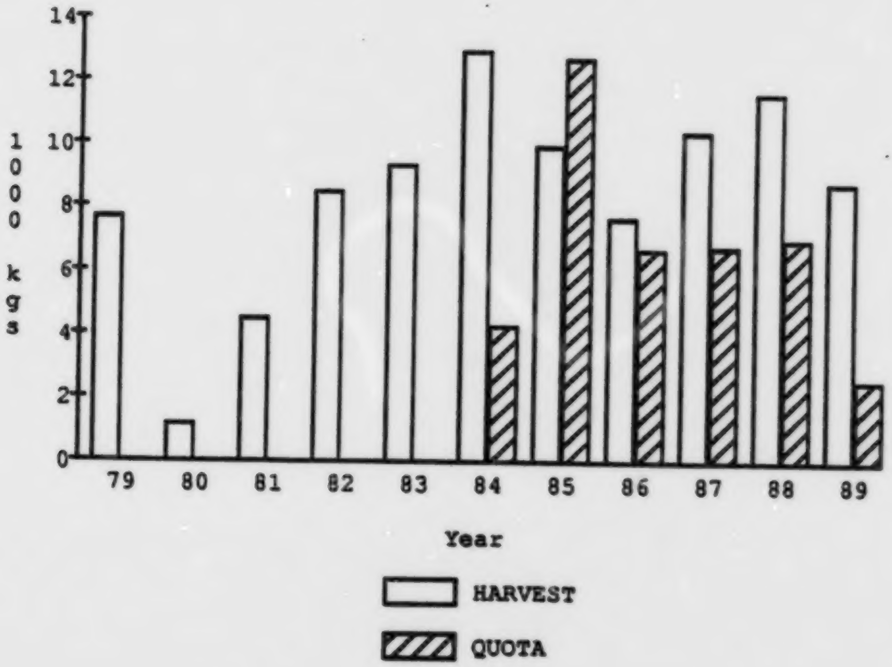


Figure 252. Annual gill net effort (km) for yellow perch in management area 6-2 (NC04), 1979 - 1989.

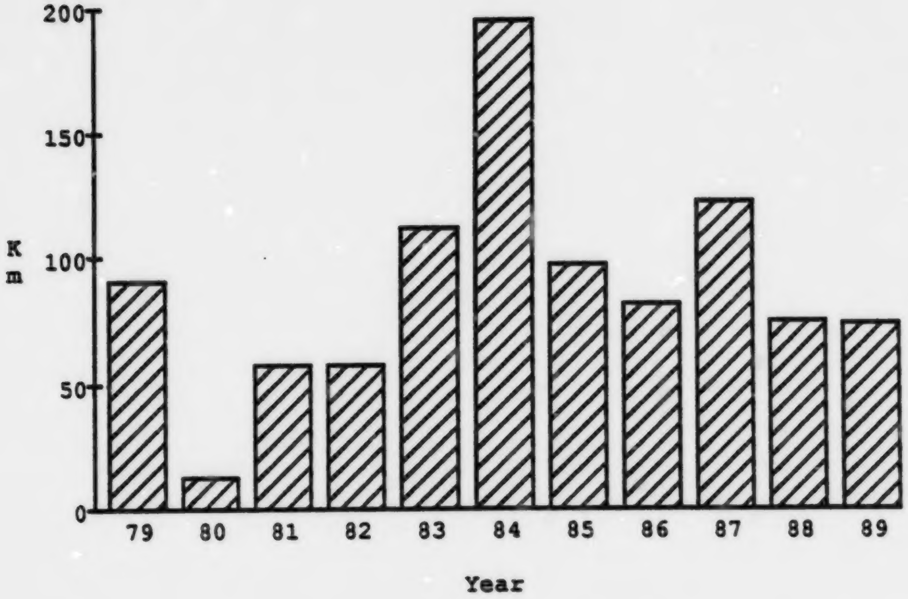


Figure 253. Yellow perch gill net CUEs (kgs/km) for management area 6-2 (NC04), 1979 - 1989.

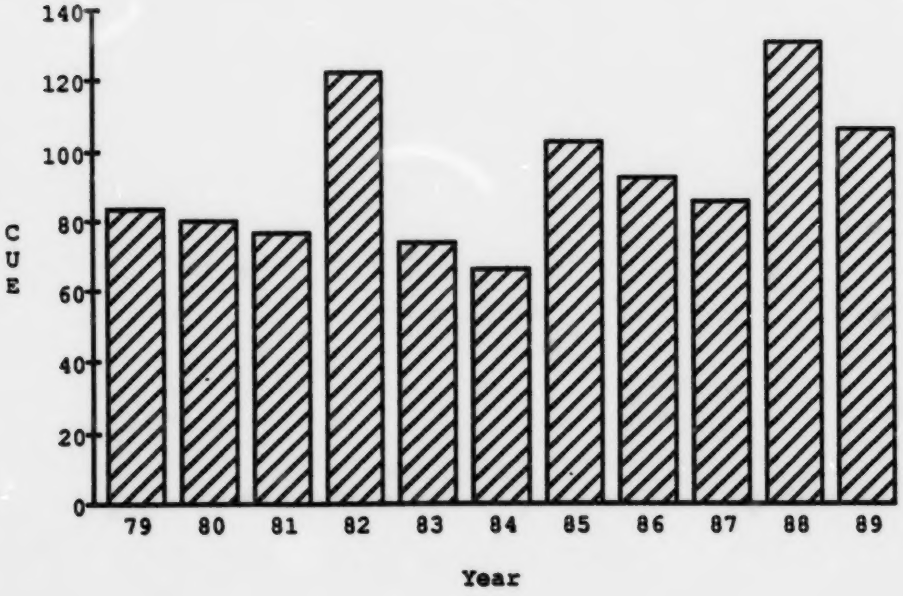


Figure 254. Lake trout/backcross harvest and quota in kilograms for management area 6-2 (NC04), 1979 - 1989.

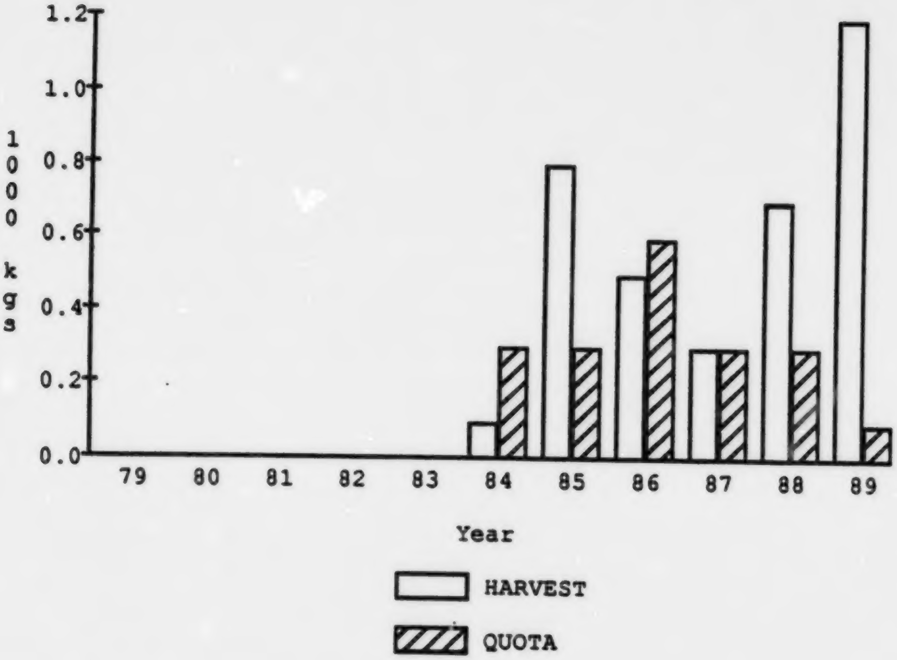
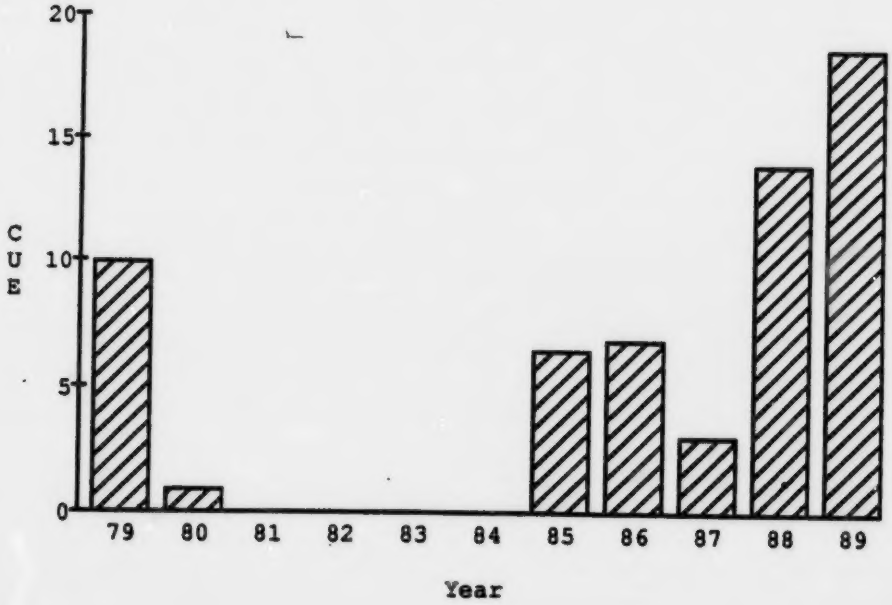


Figure 255. Lake trout/backcross gill net CUEs (kgs/km) for management area 6-2 (NC04), 1979 - 1989.



MANAGEMENT AREA 6-3

Lake Whitefish

- Harvest negligible remaining well below quota (Fig. 256).

Yellow perch

- Harvest virtually nil (Fig. 257).

Lake trout backcross

- Allocation down 14% to 877 kgs in 1989.
- Harvest down from 2135 to 941 kg in 1989, 107% of allocation (Fig. 258).

Table 68. Round weight (kgs) and value ($) by species for management area 6-3 (NC05), 1989.

SPECIES	HARVEST	VALUE
Lake trout	941	1580
Lake whitefish	849	1612
Round whitefish	2	2
Yellow perch	5	21
Discarded (mixed)	0	0

Table 69. Round weight and quota in kilograms by species for management area 6-3 (NC05), 1989.

SPECIES NAME	HARVEST	QUOTA	PERCENT TAKEN
Lake whitefish	849	4855	17.5
Yellow perch	5	1245	0.4
Lake trout/backcross	941	877	107.3
Northern pike	0	464	0.0
Channel catfish	0	454	0.0

Figure 256. Lake whitefish harvest and quota in kilograms for management area 6-3 (NC05), 1979 - 1989.

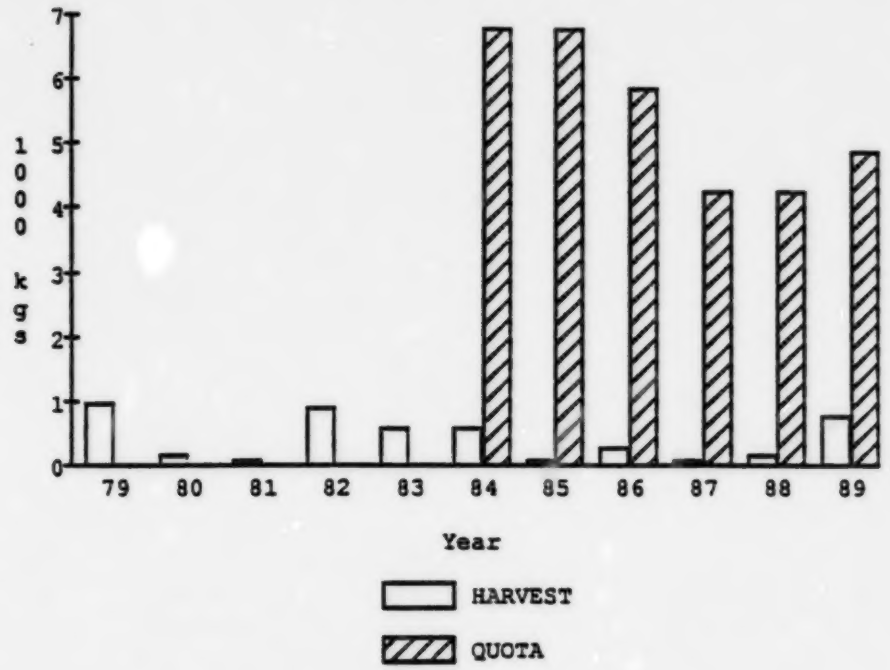


Figure 257. Yellow perch harvest and quota in kilograms for management area 6-3 (NC05), 1979 - 1989.

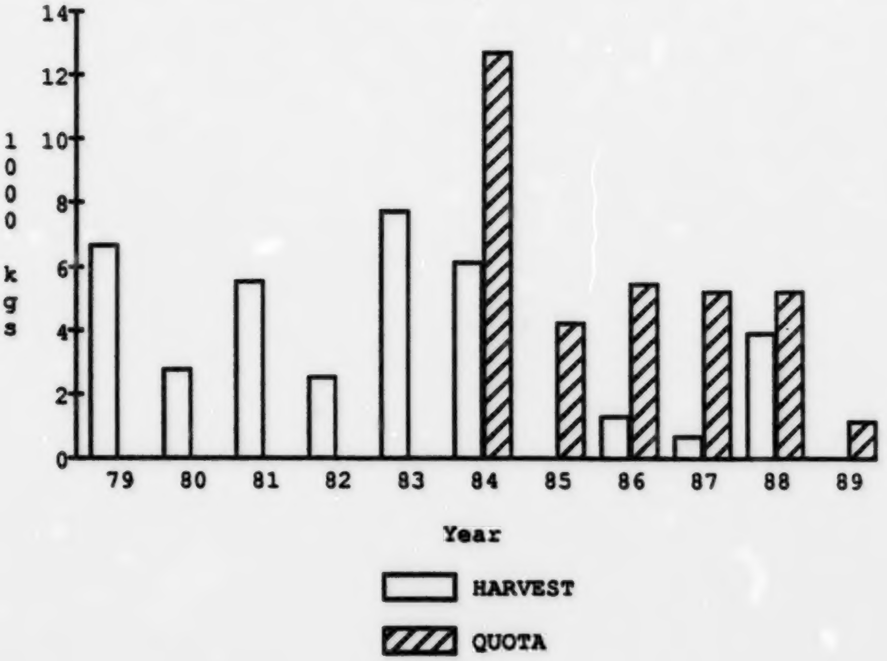
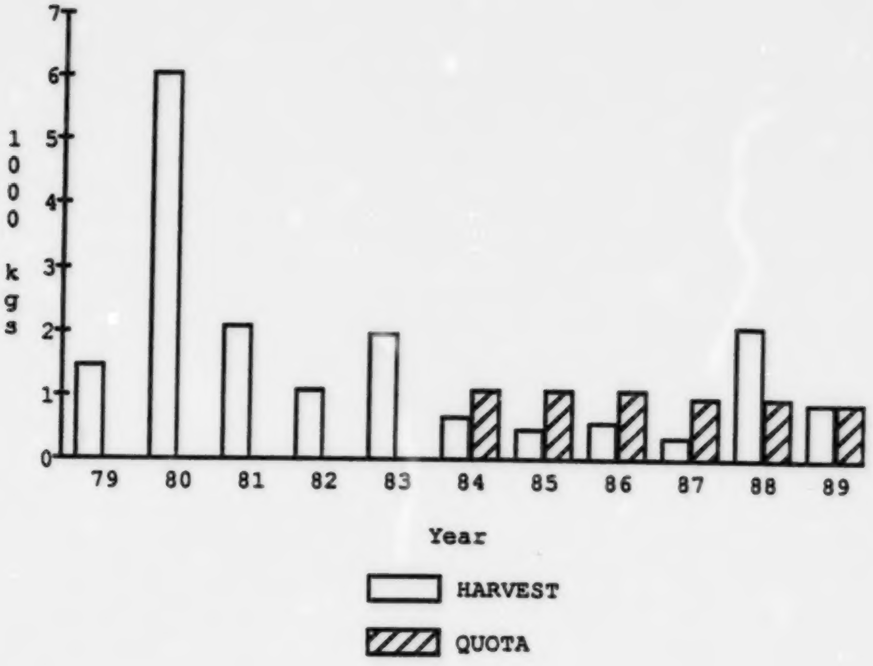


Figure 258. Lake trout/backcross harvest and quota in kilograms for management area 6-3 (NC05), 1979 - 1989.



Lake Huron Fisheries Assessment Unit
Report 2-90

Status and Outlook for the Major Commercial Fish Species of Lake Huron, 1990

Appendix

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Ontario Ministry of Natural Resources
Lake Huron Fisheries Assessment Unit

Ontario
Ministry of
Natural
Resources
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LAKE HURON

MANAGEMENT AREA 4-1

Table 1. Lake whitefish harvest and quota in kilograms for management area 4-1 (LH01), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	7272		
1980	14184		
1981	27823		
1982	44208		
1983	64974		
1984	45918	65217	70.4
1985	39934	65217	61.2
1986	47259	65217	72.5
1987	59484	75172	79.1
1988	48566	71932	67.5
1989	31470	71932	43.7

Table 2. Annual gill net effort (km) for lake whitefish in management area 4-1 (LH01), 1979 - 1989.

YEAR	EFFORT
1979	203.8
1980	607.4
1981	620.6
1982	339.9
1983	485.1
1984	661.2
1985	694.6
1986	678.3
1987	664.1
1988	638.4
1989	485.3

Table 3. Lake whitefish gill net CUEs (kgs/1000 m) for management area 4-1 (LH01), 1979 - 1989.

YEAR	CUE
1979	34.8
1980	23.3
1981	44.8
1982	111.9
1983	113.8
1984	61.6
1985	57.5
1986	69.7
1987	92.8
1988	76.1
1989	64.8

Table 4. Chub harvest and quota in kilograms for management area 4-1 (LH01), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	2602		
1980	3569		
1981	2729		
1982	318		
1983	2722		
1984	10106	15713	64.3
1985	15756	18070	87.2
1986	17115	18643	91.8
1987	13535	18685	72.4
1988	16883	20549	82.2
1989	20414	20549	99.3

Table 5. Annual gill net effort (km) for chub in management area 4-1 (LH01), 1979 - 1989.

YEAR	EFFORT
1979	55.1
1980	70.0
1981	59.3
1982	0.0
1983	35.4
1984	172.8
1985	232.2
1986	296.9
1987	204.5
1988	217.0
1989	263.8

Table 6. Chub gill net CUEs (kg/1000 m) for management area 4-1 (LH01), 1979 - 1989.

YEAR	CUE
1979	47.2
1980	51.0
1981	45.9
1982	0.0
1983	49.0
1984	48.6
1985	67.9
1986	57.6
1987	65.0
1988	77.8
1989	77.4

Table 7. Chub yield (kgs/ha) for management area 4-1 (LH01), 1979 - 1989.

YEAR	YIELD
1979	0.07
1980	0.10
1981	0.07
1982	0.01
1983	0.06
1984	0.23
1985	0.42
1986	0.46
1987	0.36
1988	0.45
1989	0.55

MANAGEMENT AREA 4-2

Table 8. Lake whitefish harvest and quota in kilograms for management area 4-2 (LH02), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	68578		
1980	109343		
1981	114429		
1982	116277		
1983	98479		
1984	116230	132910	87.5
1985	129014	132910	97.1
1986	137107	132910	103.2
1987	124244	153190	81.1
1988	143929	153161	94.0
1989	94443	153161	61.7

Table 9. Annual gill net effort (km) for lake whitefish in management area 4-2 (LH02), 1979 - 1989.

YEAR	EFFORT
1979	2167.9
1980	2804.0
1981	2088.4
1982	1404.8
1983	1003.7
1984	1521.4
1985	1162.8
1986	1426.0
1987	1123.8
1988	974.9
1989	937.5

Table 10. Annual trap net effort (# of nets) for lake whitefish in management area 4-2 (LH02), 1979 - 1989.

YEAR	EFFORT
1979	27
1980	10
1981	0
1982	217
1983	220
1984	207
1985	251
1986	249
1987	233
1988	268
1989	228

Table 11. Lake whitefish gill net CUEs (kgs/1000 m) for management area 4-2 (LH02), 1979 - 1989.

YEAR	CUE
1979	27.7
1980	35.2
1981	53.0
1982	64.4
1983	72.2
1984	60.3
1985	91.7
1986	79.8
1987	81.3
1988	98.3
1989	75.1

Table 12. Lake whitefish trap net CUEs (kgs/net) for management area 4-2 (LH02), 1979 - 1989.

YEAR	CUE
1979	70.7
1980	154.0
1981	0.0
1982	91.9
1983	94.5
1984	102.5
1985	81.3
1986	88.5
1987	110.1
1988	179.3
1989	105.5

Table 13. Chub harvest and quota in kilograms for management area 4-2, (LH02), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	8647		
1980	7530		
1981	8217		
1982	32785		
1983	33180		
1984	42418	35584	119.2
1985	35619	40922	87.0
1986	35433	35584	99.6
1987	31237	35665	87.6
1988	38988	39224	99.4
1989	39142	39224	99.8

Table 14. Annual gill net effort (km) for chub in management area 4-2 (LH02), 1979 - 1989.

YEAR	EFFORT
1979	277.9
1980	287.0
1981	210.1
1982	345.0
1983	437.0
1984	537.0
1985	507.8
1986	458.5
1987	466.6
1988	544.0
1989	431.1

Table 15. Chub gill net CUEs (kgs/1000 m) for management area 4-2 (LH02), 1979 - 1989.

YEAR	CUE
1979	29.0
1980	26.1
1981	36.6
1982	83.8
1983	66.1
1984	77.8
1985	69.6
1986	76.1
1987	59.2
1988	71.7
1989	90.8

Table 16. Chub yield (kgs/ha) for management area 4-2 (LH02), 1979 - 1989.

YEAR	YIELD
1979	0.12
1980	0.10
1981	0.11
1982	0.43
1983	0.45
1984	0.57
1985	0.48
1986	0.48
1987	0.38
1988	0.52
1989	0.53

MANAGEMENT AREA 4-3

Table 17. Lake whitefish harvest and quota in kilograms for management area 4-3 (LH03), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	85184		
1980	47248		
1981	35723		
1982	74980		
1983	45128		
1984	36678	79520	46.1
1985	51611	79520	64.9
1986	38839	79518	48.8
1987	41467	114478	36.2
1988	69197	99768	69.4
1989	64713	98194	65.9

Table 18. Annual gill net effort (km) for lake whitefish in management area 4-3 (LH03), 1979 - 1989.

YEAR	EFFORT
1979	1320.2
1980	935.8
1981	608.4
1982	612.7
1983	366.0
1984	355.3
1985	592.9
1986	439.4
1987	411.8
1988	805.1
1989	831.7

Table 19. Lake whitefish gill net CUEs (kgs/1000 m) for management area 4-3 (LH03), 1979 - 1989.

YEAR	CUE
1979	60.8
1980	49.1
1981	49.5
1982	56.5
1983	112.5
1984	102.3
1985	97.8
1986	88.8
1987	103.7
1988	85.9
1989	77.8

Table 20. Chub harvest and quota in kilograms for management area 4-3, (LH03), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	3296		
1980	9073		
1981	8859		
1982	6347		
1983	3482		
1984	30318	41640	72.8
1985	39184	41640	94.1
1986	34155	57603	59.3
1987	58471	59222	98.7
1988	47122	59371	79.4
1989	52317	59371	88.1

Table 21. Annual gill net effort (km) for chub in management area 4-3 (LH03), 1979 - 1989.

YEAR	EFFORT
1979	69.4
1980	159.6
1981	116.9
1982	101.7
1983	32.9
1984	274.8
1985	478.9
1986	536.8
1987	862.2
1988	662.5
1989	586.9

Table 22. Chub gill net CUEs (kgs/1000 m) for management area 4-3 (LH03), 1979 - 1989.

YEAR	CUE
1979	45.9
1980	52.1
1981	31.6
1982	45.3
1983	65.7
1984	109.4
1985	83.1
1986	64.0
1987	71.6
1988	71.1
1989	89.1

Table 23. Chub yield (kgs/ha) for management area 4-3 (LH03), 1979 - 1989.

YEAR	YIELD
1979	0.03
1980	0.09
1981	0.14
1982	0.06
1983	0.03
1984	0.30
1985	0.39
1986	0.34
1987	0.61
1988	0.46
1989	0.52

MANAGEMENT AREA 4-4

Table 24. Lake whitefish harvest and quota in kilograms for management area 4-4 (LH05, LH06, LH07), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	90889		
1980	173294		
1981	121616		
1982	168549		
1983	211518		
1984	252761	273339	92.5
1985	307235	273339	112.4
1986	227312	284321	79.9
1987	343895	327557	105.0
1988	288582	327495	88.1
1989	319828	327495	97.7

Table 25. Lake whitefish harvest in kilograms for assessment areas LH05 and LH06 (subareas of management area 4-4), 1979 - 1989.

LH05

YEAR	HARVEST
1979	80249
1980	153897
1981	103444
1982	157270
1983	199122
1984	256189
1985	312497
1986	241737
1987	343893
1988	261822
1989	283154

LH06

YEAR	HARVEST
1979	0
1980	68
1981	4304
1982	592
1983	588
1984	944
1985	508
1986	2
1987	0
1988	26758
1989	36672

Table 26. Annual gill net effort (km) for lake whitefish in assessment areas LH05 and LH06 (subareas of management area 4-4), 1979 - 1989.

LH05		LH06	
YEAR	EFFORT	YEAR	EFFORT
1979	714.0	1979	0.0
1980	1290.7	1980	0.0
1981	907.2	1981	19.8
1982	1572.9	1982	4.6
1983	1427.2	1983	8.4
1984	1349.7	1984	13.0
1985	1053.5	1985	0.9
1986	992.0	1986	0.0
1987	1456.4	1987	0.0
1988	1029.0	1988	165.7
1989	1210.0	1989	145.7

Table 27. Lake whitefish gill net CUEs (kgs/1000 m) for assessment areas LH05 and LH06 (subareas of management area 4-4), 1979 - 1989.

LH05		LH06	
YEAR	CUE	YEAR	CUE
1979	112.0	1979	0.0
1980	117.0	1980	0.0
1981	110.6	1981	204.2
1982	98.3	1982	67.4
1983	137.3	1983	70.0
1984	189.8	1984	72.3
1985	287.0	1985	356.7
1986	236.3	1986	0.0
1987	236.1	1987	0.0
1988	254.4	1988	161.5
1989	233.8	1989	251.7

Table 28. Chub harvest and quota in kilograms for management area 4-4, (LH05, LH06, LH[illegible]), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	9147		
1980	12209		
1981	114336		
1982	127409		
1983	198785		
1984	237276	275778	86.0
1985	166777	317146	52.6
1986	96190	277781	34.6
1987	83795	276398	30.3
1988	204044	234896	86.9
1989	139482	234896	59.4

Table 29. Chub harvest in kilograms for assessment areas LH05, LH06 and LH07 (subareas of management area 4-4), 1979 - 1989.

LH05		LH06		LH07	
YEAR	HARVEST	YEAR	HARVEST	YEAR	HARVEST
1979	4926	1979	2823	1979	0
1980	7497	1980	3337	1980	0
1981	59968	1981	30739	1981	7878
1982	70351	1982	48684	1982	0
1983	68080	1983	58171	1983	59708
1984	73681	1984	100951	1984	64455
1985	23809	1985	60298	1985	58663
1986	39405	1986	25966	1986	56513
1987	66119	1987	15011	1987	2662
1988	90161	1988	62350	1988	51529
1989	94352	1989	45127	1989	0

Table 30. Annual gill net effort (km) for chub in assessment areas LH05, LH06 and LH07 (subareas of management area 4-4), 1979 - 1989.

LH05		LH06		LH07	
YEAR	EFFORT	YEAR	EFFORT	YEAR	EFFORT
1979	51.2	1979	73.3	1979	0.0
1980	87.0	1980	62.0	1980	0.0
1981	670.9	1981	313.7	1981	50.8
1982	1018.5	1982	757.0	1982	0.0
1983	631.1	1983	667.1	1983	549.2
1984	761.4	1984	918.1	1984	494.3
1985	241.0	1985	696.1	1985	543.1
1986	521.7	1986	546.1	1986	530.1
1987	763.9	1987	268.8	1987	27.6
1988	810.1	1988	734.9	1988	658.5
1989	681.6	1989	337.4	1989	0.0

Table 31. Chub gill net CUEs (kgs/1000 m) for assessment areas LH05, LH06 and LH07 (subareas of management area 4-4), 1979 - 1989.

LH05		LH06		LH07	
YEAR	CUE	YEAR	CUE	YEAR	CUE
1979	89.8	1979	38.5	1979	0.0
1980	65.4	1980	53.8	1980	0.0
1981	79.4	1981	98.0	1981	155.1
1982	68.5	1982	64.3	1982	0.0
1983	93.1	1983	87.2	1983	108.7
1984	86.2	1984	109.8	1984	130.4
1985	98.8	1985	86.6	1985	108.0
1986	75.5	1986	47.5	1986	106.6
1987	86.5	1987	55.8	1987	96.4
1988	111.3	1988	84.8	1988	78.3
1989	138.4	1989	133.7	1989	0.0

Table 32. Chub yield (kgs/ha) for assessment areas LH05, LH06 and LH07 (subareas of management area 4-4), 1979 - 1989.

LH05		LH06		LH07	
YEAR	YIELD	YEAR	YIELD	YEAR	YIELD
1979	0.05	1979	0.04	1979	0.00
1980	0.07	1980	0.05	1980	0.00
1981	0.58	1981	0.45	1981	0.06
1982	0.68	1982	0.72	1982	0.00
1983	0.66	1983	0.86	1983	0.44
1984	0.71	1984	1.49	1984	0.48
1985	0.23	1985	0.89	1985	0.43
1986	0.38	1986	0.38	1986	0.42
1987	0.64	1987	0.22	1987	0.02
1988	0.87	1988	0.92	1988	0.38
1989	0.91	1989	0.67	1989	0.00

Table 33. Yellow perch harvest and quota in kilograms for management area 4-4 (LH05, LH06, LH07), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	2685		
1980	10804		
1981	4874		
1982	6603		
1983	40191		
1984	8387	10161	82.5
1985	6097	10161	60.0
1986	8221	10161	80.9
1987	14923	20362	73.3
1988	6262	20362	30.8
1989	10746	18327	58.6

Table 34. Yellow perch harvest in kilograms for assessment areas LH05 and LH06 (subareas of management area 4-4), 1979 - 1989.

LH05		LH06	
YEAR	HARVEST	YEAR	HARVEST
1979	1688	1979	995
1980	9557	1980	1245
1981	3546	1981	1324
1982	5971	1982	630
1983	34380	1983	7255
1984	4868	1984	3517
1985	5047	1985	1723
1986	3749	1986	4474
1987	13619	1987	1302
1988	3372	1988	2888
1989	6888	1989	3854

Table 35. Annual gill net effort (km) for yellow perch in assessment areas LH05 and LH06 (subareas of management area 4-4), 1979 - 1989.

LH05		LH06	
YEAR	EFFORT	YEAR	EFFORT
1979	39.0	1979	50.7
1980	100.9	1980	13.1
1981	80.8	1981	65.7
1982	138.1	1982	32.7
1983	469.7	1983	112.9
1984	123.3	1984	93.3
1985	81.1	1985	15.9
1986	66.3	1986	56.1
1987	170.5	1987	32.1
1988	141.1	1988	79.2
1989	219.2	1989	39.6

Table 36. Yellow perch gill net CUEs (kgs/1000 m) for assessment areas LH05 and LH06 (subareas of management area 4-4), 1979 - 1989.

LH05

YEAR	CUE
1979	38.4
1980	83.2
1981	22.4
1982	39.2
1983	57.9
1984	36.9
1985	55.1
1986	55.9
1987	74.6
1988	22.5
1989	27.8

LH06

YEAR	CUE
1979	19.6
1980	95.0
1981	20.8
1982	19.3
1983	65.3
1984	39.2
1985	108.4
1986	79.8
1987	40.6
1988	36.5
1989	97.3

Table 37. Lake trout/backcross harvest in kilograms for assessment area LH05 (subarea of management area 4-4), 1979 - 1989.

YEAR	HARVEST
1979	151
1980	330
1981	89
1982	192
1983	684
1984	1287
1985	262
1986	109
1987	107
1988	191
1989	899

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Table 38. Lake whitefish harvest and quota in kilograms for management area 4-5 (LH08), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	489		
1980	406		
1981	119		
1982	439		
1983	21		
1984	5378	10422	51.6
1985	7400	10422	71.0
1986	2721	5446	50.0
1987	13309	5450	244.2
1988	14355	5450	263.4
1989	17401	5450	319.3

Table 39. Annual gill net effort (km) for lake whitefish in management area 4-5 (LH08), 1979 - 1989.

YEAR	EFFORT
1979	5.5
1980	5.7
1981	1.8
1982	35.7
1983	0.0
1984	193.0
1985	82.7
1986	18.9
1987	202.8
1988	73.2
1989	113.9

Table 40. Lake whitefish gill net CUEs (kgs/1000 m) for management area 4-5 (LH08), 1979 - 1989.

YEAR	CUE
1979	75.5
1980	33.3
1981	0.0
1982	9.2
1983	0.0
1984	45.0
1985	66.0
1986	144.0
1987	76.6
1988	196.1
1989	165.8

Table 41. Chub harvest and quota in kilograms for management area 4-5 (LH08), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	1139		
1980	14275		
1981	17382		
1982	16066		
1983	12129		
1984	15297	40387	37.9
1985	68472	46445	147.4
1986	17180	40387	42.5
1987	18155	41242	44.0
1988	29885	41234	72.5
1989	3776	41234	9.2

Table 42. Annual gill net effort (km) for chub in management area 4-5 (LH08), 1979 - 1989.

YEAR	EFFORT
1979	43.3
1980	66.0
1981	507.1
1982	643.7
1983	298.8
1984	354.2
1985	2815.8
1986	217.2
1987	146.0
1988	391.5
1989	24.9

Table 43. Chub gill net CUEs (kgs/1000 m) for management area 4-5 (LH08), 1979 - 1989.

YEAR	CUE
1979	26.3
1980	213.8
1981	34.3
1982	25.0
1983	40.8
1984	43.2
1985	24.3
1986	79.1
1987	75.6
1988	75.9
1989	151.6

Table 44. Chub yield (kgs/ha) for management area 4-5 (LH08), 1979 - 1989.

YEAR	YIELD
1979	0.01
1980	0.12
1981	0.14
1982	0.13
1983	0.10
1984	0.13
1985	0.56
1986	0.14
1987	0.15
1988	0.25
1989	0.03

Table 45. Yellow perch harvest and quota in kilograms for management area 4-5 (LH08), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	12577		
1980	44754		
1981	48655		
1982	31509		
1983	16619		
1984	43904	55338	79.3
1985	70365	55338	127.2
1986	35027	55338	63.3
1987	55000	62309	88.3
1988	59735	52964	112.8
1989	130320	40919	318.5

Table 46. Annual gill net effort (km) for yellow perch in management area 4-5 (LH08), 1979 - 1989.

YEAR	EFFORT
1979	571.3
1980	625.6
1981	1490.5
1982	1840.8
1983	1052.5
1984	1440.5
1985	2800.8
1986	1105.1
1987	1262.4
1988	1017.3
1989	1823.4

Table 47. Yellow perch gill net CUEs (kgs/1000 m) for management area 4-5 (LH08), 1979 - 1989.

YEAR	CUE
1979	22.0
1980	71.2
1981	32.6
1982	17.1
1983	15.8
1984	30.4
1985	25.4
1986	31.6
1987	47.0
1988	58.7
1989	71.5

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Table 48. Lake whitefish harvest and quota in kilograms for management area 4-6 (LH09), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	235943		
1980	241003		
1981	275161		
1982	414528		
1983	880395		
1984	511960	564646	90.7
1985	583007	564646	103.3
1986	573022	561912	102.0
1987	551118	562356	98.0
1988	548242	562272	97.5
1989	535975	573233	93.5

Table 49. Annual gill net effort (km) for lake whitefish in management area 4-6 (LH09), 1979 - 1989.

YEAR	EFFORT
1979	2791.7
1980	2721.7
1981	2241.5
1982	2682.2
1983	4808.3
1984	4067.5
1985	2572.6
1986	2435.4
1987	2571.6
1988	2987.5
1989	2196.6

Table 50. Annual trap net effort (# of nets) for lake whitefish in management area 4-6 (LH09), 1979 - 1989.

YEAR	EFFORT
1979	759
1980	1086
1981	1275
1982	1248
1983	985
1984	454
1985	464
1986	800
1987	1010
1988	626
1989	873

Table 51. Lake whitefish gill net CUEs (kgs/1000 m) for management area 4-6 (LH09), 1979 - 1989.

YEAR	CUE
1979	76.4
1980	69.3
1981	100.5
1982	114.2
1983	141.1
1984	111.4
1985	205.0
1986	208.3
1987	231.4
1988	169.5
1989	226.2

Table 52. Lake whitefish trap net CUEs (kgs/net) for management area 4-6 (LH09), 1979 - 1989.

YEAR	CUE
1979	25.5
1980	29.7
1981	27.0
1982	35.1
1983	92.3
1984	89.8
1985	130.9
1986	70.8
1987	33.0
1988	38.9
1989	41.7

Table 53. Chub harvest and quota in kilograms for management area 4-6 (LH09), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	48026		
1980	63454		
1981	81085		
1982	47821		
1983	42353		
1984	146137	134221	108.9
1985	93281	154354	60.4
1986	80188	134250	59.7
1987	29531	133613	22.1
1988	67013	117622	57.0
1989	14933	128057	11.7

Table 54. Annual gill net effort (km) for chub in management area 4-6 (LH09), 1979 - 1989.

YEAR	EFFORT
1979	528.6
1980	502.2
1981	642.9
1982	455.8
1983	422.4
1984	1708.2
1985	1017.2
1986	798.1
1987	684.9
1988	994.0
1989	144.0

Table 55. Chub gill net CUEs (kgs/1000 m) for management area 4-6 (LH09), 1979 - 1989.

YEAR	CUE
1979	84.3
1980	112.3
1981	108.1
1982	98.2
1983	87.0
1984	82.1
1985	88.9
1986	98.1
1987	33.5
1988	63.2
1989	99.3

Table 56. Chub yield (kgs/ha) for management area 4-6 (LH09), 1979 - 1989.

YEAR	YIELD
1979	0.98
1980	1.27
1981	1.65
1982	0.93
1983	0.84
1984	2.93
1985	1.89
1986	1.65
1987	0.63
1988	1.37
1989	0.30

Table 57. Yellow perch harvest and quota in kilograms for management area 4-6 (LH09), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	44143		
1980	148264		
1981	191094		
1982	101875		
1983	93291		
1984	162772	194015	83.9
1985	160209	194015	82.6
1986	176055	194015	90.7
1987	129008	250966	51.4
1988	98219	219558	44.7
1989	101098	238915	42.3

Table 58. Annual gill net effort (km) for yellow perch in management area 4-6 (LH09), 1979 - 1989.

YEAR	EFFORT
1979	985.7
1980	1663.9
1981	3107.7
1982	2992.4
1983	1828.4
1984	2391.5
1985	2176.0
1986	2745.7
1987	1977.4
1988	1913.6
1989	1685.7

Table 59. Annual trap net effort (# of nets) for yellow perch in management area 4-6 (LH09), 1979 - 1989.

YEAR	EFFORT
1979	2546
1980	2762
1981	2727
1982	2361
1983	2729
1984	2139
1985	2162
1986	1785
1987	2388
1988	1505
1989	1827

Table 60. Yellow perch gill net CUEs (kgs/1000 m) for management area 4-6 (LH09), 1979 - 1989.

YEAR	CUE
1979	36.5
1980	74.4
1981	50.6
1982	30.4
1983	39.5
1984	63.4
1985	62.0
1986	69.6
1987	63.8
1988	49.3
1989	58.3

Table 61. Yellow perch trap net CUEs (kgs/net) for management area 4-6 (LH09), 1979 - 1989.

YEAR	CUE
1979	2.9
1980	3.0
1981	5.1
1982	2.4
1983	4.0
1984	3.5
1985	6.1
1986	5.9
1987	4.7
1988	2.5
1989	4.5

Table 62. Walleye harvest and quota in kilograms for management area 4-6 (LH09), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	93869		
1980	124517		
1981	121205		
1982	113425		
1983	120620		
1984	126458	124231	101.8
1985	118579	124231	95.5
1986	121869	124231	98.1
1987	134165	136258	98.5
1988	138609	136735	101.4
1989	110646	136754	80.9

Table 63. Walleye gill net harvest in kilograms for management area 4-6 (LH09), 1979 - 1989.

YEAR	HARVEST
1979	9603
1980	20212
1981	20554
1982	25428
1983	26684
1984	19259
1985	16397
1986	10126
1987	13326
1988	12452
1989	8258

Table 64. Walleye trap net harvest in kilograms for management area 4-6 (LH09), 1979 - 1989.

YEAR	HARVEST
1979	84262
1980	104302
1981	100645
1982	87995
1983	93930
1984	107277
1985	102446
1986	112503
1987	123201
1988	126152
1989	102383

Table 65. Annual gill net effort (km) for walleye in management area 4-6 (LH09), 1979 - 1989.

YEAR	EFFORT
1979	818.2
1980	932.3
1981	1168.2
1982	1487.6
1983	1195.9
1984	1148.8
1985	502.4
1986	782.6
1987	897.0
1988	806.1
1989	562.0

Table 66. Annual trap net effort (# of nets) for walleye in management area 4-6 (LH09), 1979 - 1989.

YEAR	EFFORT
1979	2583
1980	2798
1981	2898
1982	2253
1983	2905
1984	3300
1985	2163
1986	2330
1987	2453
1988	1794
1989	2032

Table 67. Walleye gill net CUEs (kgs/1000 m) for management area 4-6 (LH09), 1979 - 1989.

YEAR	CUE
1979	8.7
1980	14.7
1981	11.9
1982	12.4
1983	21.0
1984	11.3
1985	30.6
1986	12.0
1987	12.9
1988	11.1
1989	12.8

Table 68. Walleye trap net CUEs (kgs/nets) for management area 4-6 (LH09), 1979 - 1989.

YEAR	CUE
1979	32.6
1980	37.3
1981	34.7
1982	39.1
1983	32.3
1984	32.5
1985	47.4
1986	48.3
1987	50.2
1988	70.3
1989	50.4

Table 69. Lake trout/backcross harvest and quota in kilograms for management area 4-6 (LH09), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	26633		
1980	29144		
1981	26971		
1982	17937		
1983	51810		
1984	26941	36705	73.4
1985	19852	36680	54.1
1986	27063	36682	73.8
1987	27161	36748	73.9
1988	17928	36748	48.8
1989	13745	33570	40.9

Table 70. Lake trout/backcross gill net CUEs (kgs/1000 m) for management area 4-6 (LH09), 1979 - 1989.

YEAR	CUE
1979	9.1
1980	11.0
1981	14.6
1982	6.9
1983	15.5
1984	12.6
1985	20.2
1986	24.8
1987	24.4
1988	9.7
1989	11.1

Table 71. Lake trout/backcross trap net CUEs (kgs/net) for management area 4-6 (LH09), 1979 - 1989.

YEAR	CUE
1979	1.1
1980	2.8
1981	2.7
1982	2.5
1983	2.9
1984	4.0
1985	0.9
1986	0.8
1987	2.5
1988	1.9
1989	1.2

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Table 72. Lake whitefish harvest and quota in kilograms for management area 4-7 (LH04), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	11177		
1980	27074		
1981	35103		
1982	19962		
1983	34788		
1984	20243	76401	26.5
1985	48705	76401	63.7
1986	49133	76401	64.3
1987	76638	74038	103.5
1988	36614	68816	53.2
1989	59893	67909	88.2

Table 73. Annual gill net effort (km) for lake whitefish in management area 4-7 (LH04), 1979 - 1989.

YEAR	EFFORT
1979	447.8
1980	346.0
1981	381.6
1982	243.5
1983	410.6
1984	240.7
1985	259.1
1986	274.0
1987	727.9
1988	219.0
1989	312.4

Table 74. Lake whitefish gill net CUEs (kgs/1000 m) for management area 4-7 (LH04), 1979 - 1989.

YEAR	CUE
1979	22.1
1980	75.0
1981	87.9
1982	80.6
1983	78.4
1984	85.4
1985	156.1
1986	175.4
1987	105.3
1988	167.2
1989	191.7

Table 75. Chub harvest and quota in kilograms for management area 4-7 (LH04), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	4918		
1980	8249		
1981	16486		
1982	7543		
1983	5457		
1984	42954	38946	110.30
1985	33275	44788	74.30
1986	32145	54092	59.40
1987	39352	53967	72.90
1988	41537	53764	77.30
1989	49596	53764	92.20

Table 76. Annual gill net effort (km) for chub in management area 4-7 (LH04), 1979 - 1989.

YEAR	EFFORT
1979	108.5
1980	322.9
1981	310.6
1982	152.5
1983	116.8
1984	556.2
1985	435.4
1986	394.1
1987	591.0
1988	480.9
1989	512.5

Table 77. Chub gill net CUEs (kgs/1000 m) for management area 4-7 (LH04), 1979 - 1989.

YEAR	CUE
1979	41.3
1980	25.2
1981	50.9
1982	49.4
1983	45.4
1984	78.3
1985	67.5
1986	81.6
1987	66.5
1988	86.4
1989	96.8

Table 78. Chub yield (kgs/ha) for management area 4-7 (LH04), 1979 - 1989.

YEAR	YIELD
1979	0.03
1980	0.06
1981	0.12
1982	0.06
1983	0.04
1984	0.32
1985	0.24
1986	0.24
1987	0.29
1988	0.30
1989	0.36

GEORGIAN BAY

MANAGEMENT AREA 5-1

Table 79. Lake whitefish harvest and quota in kilograms for management area 5-1 (GB01), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	13362		
1980	24536		
1981	15061		
1982	7679		
1983	6517		
1984	9593	49037	19.6
1985	17974	49037	36.7
1986	28899	49037	58.9
1987	11944	41836	28.5
1988	8717	42114	20.7
1989	7370	35509	20.8

Table 80. Annual gill net effort (km) for lake whitefish in management area 5-1 (GB01), 1979 - 1989.

YEAR	EFFORT
1979	545.5
1980	417.6
1981	173.3
1982	183.5
1983	462.5
1984	193.7
1985	363.0
1986	448.2
1987	393.8
1988	594.0
1989	121.9

Table 81. Lake whitefish gill net CUEs (kgs/1000 m) for management area 5-1 (GB01), 1979 - 1989.

YEAR	CUE
1979	24.3
1980	28.6
1981	28.7
1982	11.4
1983	9.9
1984	44.8
1985	49.7
1986	63.8
1987	29.8
1988	14.4
1989	60.5

Table 82. Chub harvest and quota in kilograms for management area 5-1 (GB01), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	7096		
1980	914		
1981	980		
1982	3555		
1983	1464		
1984	4529	18004	25.2
1985	4697	20704	22.7
1986	12490	17553	71.2
1987	9290	17468	53.2
1988	6166	17599	35.0
1989	3799	17052	22.3

Table 83. Annual gill net effort (km) for chub in management area 5-1 (GB01), 1979 - 1989.

YEAR	EFFORT
1979	211.6
1980	108.3
1981	33.0
1982	121.6
1983	60.9
1984	139.8
1985	48.1
1986	285.8
1987	243.2
1988	226.1
1989	14.8

Table 84. Chub gill net CUEs (kgs/1000 m) for management area 5-1 (GB01), 1979 - 1989.

YEAR	CUE
1979	33.8
1980	8.4
1981	29.9
1982	28.3
1983	21.1
1984	31.6
1985	98.3
1986	44.0
1987	37.7
1988	27.3
1989	256.7

Table 85. Chub yield (kgs/ha) for management area 5-1 (GB01), 1979 - 1989.

YEAR	YIELD
1979	4.09
1980	0.53
1981	0.56
1982	2.05
1983	0.83
1984	2.76
1985	2.71
1986	7.20
1987	5.32
1988	3.53
1989	2.18

Table 86. Yellow perch harvest and quota in kilograms for management area 5-1 (GB01), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	15888		
1980	15970		
1981	14809		
1982	6727		
1983	16126		
1984	14714	28783	51.1
1985	11601	28783	40.3
1986	8510	30824	27.6
1987	6789	29788	22.8
1988	6994	29869	23.4
1989	1907	25801	7.4

Table 87. Annual gill net effort (km) for yellow perch in management area 5-1 (GB01), 1979 - 1989.

YEAR	EFFORT
1979	792.8
1980	510.4
1981	503.4
1982	335.5
1983	774.2
1984	557.0
1985	227.9
1986	358.7
1987	330.6
1988	571.7
1989	104.4

Table 88. Yellow perch gill net CUEs (kgs/1000 m) for management area 5-1 (GB01), 1979 - 1989.

YEAR	CUE
1979	20.0
1980	24.1
1981	23.7
1982	18.2
1983	20.5
1984	28.4
1985	50.3
1986	23.4
1987	20.4
1988	12.2
1989	18.3

Table 89. Lake trout/backcross harvest and quota in kilograms for management area 5-1 (GB01), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	412		
1980	3546		
1981	850		
1982	900		
1983	271		
1984	822	1588	51.8
1985	2286	1588	144.0
1986	2591	2672	97.0
1987	1187	2562	46.3
1988	1387	2562	54.1
1989	845	2596	32.6

MANAGEMENT AREA 5-2

Table 90. Lake whitefish harvest and quota in kilograms for management area 5-2 (GB02), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	17267		
1980	8428		
1981	7343		
1982	6732		
1983	6360		
1984	9488	22612	42.0
1985	7239	22612	32.0
1986	2532	21354	11.9
1987	2507	21398	11.7
1988	2108	21398	9.9
1989	1683	19258	8.7

Table 91. Annual gill net effort (km) for lake whitefish in management are 5-2 (GB02), 1979 - 1989.

YEAR	EFFORT
1979	764.3
1980	620.0
1981	280.5
1982	92.7
1983	157.7
1984	154.4
1985	201.8
1986	69.5
1987	74.7
1988	21.9
1989	33.2

Table 92. Lake whitefish gill net CUEs (kgs/1000 m) for management area 5-2 (GB02), 1979 - 1989.

YEAR	CUE
1979	22.5
1980	13.5
1981	25.6
1982	71.4
1983	40.2
1984	61.4
1985	34.7
1986	37.5
1987	31.4
1988	94.0
1989	51.3

Table 93. Chub harvest and quota in kilograms for management area 5-2 (GB02), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	10228		
1980	3502		
1981	14		
1982	1		
1983	0		
1984	8583	17270	49.7
1985	11838	20120	58.8
1986	10754	17270	62.3
1987	8139	19841	41.0
1988	7260	20163	36.0
1989	109	20163	0.5

Table 94. Annual gill net effort (km) for chub in management area 5-2 (GB02), 1979 - 1989.

YEAR	EFFORT
1979	313.8
1980	56.6
1981	3.7
1982	2.7
1983	0.0
1984	59.5
1985	90.8
1986	159.9
1987	123.7
1988	124.4
1989	2.7

Table 95. Chub gill net CUEs (kgs/1000 m) for management area 5-2 (GB02), 1979 - 1989.

YEAR	CUE
1979	31.5
1980	29.2
1981	3.8
1982	0.0
1983	0.0
1984	141.9
1985	101.8
1986	67.5
1987	65.8
1988	58.4
1989	40.4

Table 96. Chub yield (kgs/ha) for management area 5-2 (GB02), 1979 - 1989.

YEAR	YIELD
1979	0.87
1980	0.30
1981	0.00
1982	0.00
1983	0.00
1984	0.73
1985	1.01
1986	0.92
1987	0.69
1988	0.62
1989	0.01

Table 97. Yellow perch harvest and quota in kilograms for management area 5-2 (GB02), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	287		
1980	0		
1981	0		
1982	22		
1983	212		
1984	179	907	19.7
1985	477	1043	45.7
1986	112	1043	10.7
1987	845	1132	74.6
1988	484	1244	38.9
1989	1	1244	0.1

Table 98. Annual gill net effort (km) for yellow perch in management area 5-2 (GB02), 1979 - 1989.

YEAR	EFFORT
1979	4.7
1980	0.0
1981	0.0
1982	2.7
1983	0.0
1984	12.3
1985	14.2
1986	15.0
1987	38.9
1988	7.1
1989	0.0

Table 99. Yellow perch gill net CUEs (kgs/1000 m) for management area 5-2 (GB02), 1979 - 1989.

YEAR	CUE
1979	47.0
1980	0.0
1981	0.0
1982	8.1
1983	0.0
1984	14.5
1985	31.1
1986	5.1
1987	20.3
1988	68.2
1989	0.0

Table 100. Walleye harvest and quota in kilograms for management area 5-2 (GB02), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	7253		
1980	7727		
1981	5942		
1982	5837		
1983	6671		
1984	3443	5002	68.8
1985	1878	5002	37.5
1986	1981	4551	43.5
1987	2014	4561	44.2
1988	2144	4591	46.7
1989	1940	4591	42.3

Table 101. Walleye gill net CUEs (kgs/1000 m) for management area 5-2 (GB02), 1979 - 1989.

YEAR	CUE
1979	17.9
1980	19.7
1981	24.8
1982	43.6
1983	28.1
1984	24.8
1985	17.8
1986	25.4
1987	21.8
1988	50.9
1989	21.3

MANAGEMENT AREA 5-3

Table 102. Lake whitefish harvest and quota in kilograms for management area 5-3 (GB03, GB04, GB06), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	5935		
1980	11301		
1981	6214		
1982	9017		
1983	3154		
1984	8867	30120	29.4
1985	34279	30120	113.8
1986	24449	31881	76.7
1987	17218	39946	43.1
1988	8172	40197	20.3
1989	8998	36508	24.6

Table 103. Lake whitefish harvest in kilograms for assessment areas GB03, GB04 and GB06 (subareas of management area 5-3), 1979 - 1989.

GB03		GB04		GB06	
YEAR	HARVEST	YEAR	HARVEST	YEAR	HARVEST
1979	5903	1979	0	1979	0
1980	6938	1980	0	1980	4264
1981	5307	1981	0	1981	765
1982	6627	1982	109	1982	1952
1983	2679	1983	0	1983	263
1984	9026	1984	0	1984	324
1985	29541	1985	10	1985	2815
1986	23729	1986	0	1986	2700
1987	15916	1987	107	1987	1192
1988	5800	1988	1	1988	2368
1989	6872	1989	0	1989	2125

Table 104. Annual gill net effort (km) for lake whitefish in assessment areas GB03 and GB06 (subareas of management area 5-3), 1979 - 1989.

GB03		GB06	
YEAR	EFFORT	YEAR	EFFORT
1979	47.1	1979	0.0
1980	65.7	1980	40.6
1981	71.9	1981	50.1
1982	70.6	1982	124.7
1983	41.8	1983	10.2
1984	71.6	1984	8.9
1985	380.1	1985	44.0
1986	253.1	1986	67.7
1987	202.6	1987	32.1
1988	179.9	1988	18.1
1989	38.5	1989	19.5

Table 105. Lake whitefish gill net CUEs (kgs/1000 m) for assessment areas GB03 and GB06 (subareas of management area 5-3), 1979 - 1989.

GB03		GB06	
YEAR	CUE	YEAR	CUE
1979	55.3	1979	0.0
1980	77.7	1980	105.0
1981	64.4	1981	15.3
1982	92.1	1982	14.9
1983	64.1	1983	25.8
1984	121.8	1984	36.4
1985	77.7	1985	64.0
1986	86.8	1986	39.5
1987	78.6	1987	37.1
1988	32.2	1988	130.8
1989	178.5	1989	109.0

Table 106. Chub harvest and quota in kilograms for management area 5-3 (GB03, GB04, GB06), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	72155		
1980	97395		
1981	45813		
1982	63974		
1983	98314		
1984	149450	182268	82.0
1985	185987	182268	102.0
1986	138518	182268	76.0
1987	102015	185787	54.9
1988	153571	185787	82.7
1989	149738	185787	80.6

Table 107. Chub harvest in kilograms for assessment areas GB03, GB04 and GB06 (subareas of management area 5-3), 1979 - 1989.

GB03

YEAR	HARVEST
1979	37874
1980	25546
1981	18811
1982	22284
1983	36101
1984	50760
1985	68764
1986	47239
1987	36063
1988	53956
1989	66617

GB04

YEAR	HARVEST
1979	23955
1980	19159
1981	18427
1982	5604
1983	17283
1984	19340
1985	11704
1986	18150
1987	20662
1988	31826
1989	9665

GB06

YEAR	HARVEST
1979	10321
1980	11475
1981	10979
1982	17227
1983	45477
1984	60016
1985	84901
1986	64399
1987	45287
1988	67785
1989	73453

Table 108. Annual gill net effort (km) for chub in assessment areas GB03, GB04 and GB06 (subareas of management area 5-3), 1979 - 1989.

GB03		GB04		GB06	
YEAR	EFFORT	YEAR	EFFORT	YEAR	EFFORT
1979	717.4	1979	397.4	1979	305.1
1980	1008.6	1980	463.4	1980	356.3
1981	513.1	1981	411.8	1981	352.3
1982	492.2	1982	170.7	1982	636.6
1983	691.6	1983	426.1	1983	1356.8
1984	608.1	1984	173.0	1984	589.5
1985	802.4	1985	83.4	1985	797.4
1986	740.7	1986	185.2	1986	765.2
1987	542.0	1987	172.6	1987	691.3
1988	783.7	1988	331.8	1988	1093.4
1989	665.8	1989	109.8	1989	997.8

Table 109. Chub gill net CUEs (kgs/1000 m) for assessment areas GB03, GB04 and GB06 (subareas of management area 5-3), 1979 - 1989.

GB03		GB04		GB06	
YEAR	CUE	YEAR	CUE	YEAR	CUE
1979	50.2	1979	60.3	1979	33.8
1980	25.3	1980	40.6	1980	29.4
1981	36.7	1981	44.7	1981	29.3
1982	45.1	1982	32.8	1982	26.6
1983	52.2	1983	40.6	1983	33.5
1984	83.4	1984	111.8	1984	101.8
1985	85.7	1985	131.2	1985	105.1
1986	63.8	1986	98.0	1986	77.9
1987	66.5	1987	117.6	1987	65.5
1988	68.8	1988	95.9	1988	62.0
1989	100.1	1989	88.0	1989	73.6

Table 110. Chub yield (kgs/ha) for assessment areas GB03, GB04 and GB06 (subareas of management area 5-3), 1979 - 1989.

GB03		GB04		GB06	
YEAR	YIELD	YEAR	YIELD	YEAR	YIELD
1979	0.39	1979	0.29	1979	0.09
1980	0.27	1980	0.23	1980	0.10
1981	0.20	1981	0.23	1981	0.09
1982	0.23	1982	0.07	1982	0.15
1983	0.38	1983	0.21	1983	0.39
1984	0.53	1984	0.24	1984	0.52
1985	0.71	1985	0.14	1985	0.73
1986	0.49	1986	0.22	1986	0.55
1987	0.37	1987	0.25	1987	0.39
1988	0.56	1988	0.39	1988	0.58
1989	0.69	1989	0.12	1989	0.63

Table 111. Yellow perch harvest and quota in kilograms for management area 5-3 (GB03, GB04, GB06), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	1071		
1980	489		
1981	128		
1982	337		
1983	207		
1984	433	4100	10.6
1985	193	4100	4.7
1986	52	4100	1.3
1987	1000	3899	25.6
1988	88	3899	2.3
1989	71	4554	1.6

Table 112. Lake trout/backcross harvest in kilograms for assessment area GB06 (subarea of management area 5-3), 1979 - 1989.

YEAR	HARVEST
1979	0
1980	2791
1981	1598
1982	0
1983	0
1984	0
1985	1566
1986	1517
1987	1193
1988	1015
1989	568

Table 113. Annual gill net effort (km) for lake trout/backcross in assessment area GB06 (subarea of management area 5-3), 1979 - 1989.

YEAR	EFFORT
1979	0.0
1980	39.5
1981	53.3
1982	0.0
1983	0.0
1984	0.0
1985	39.4
1986	61.1
1987	42.9
1988	18.2
1989	11.1

Table 114. Lake trout/backcross gill net CUEs (kgs/1000 m) for assessment area GB06 (subarea of management area 5-3), 1979 - 1989.

YEAR	CUE
1979	0.0
1980	67.5
1981	20.9
1982	0.0
1983	0.0
1984	0.0
1985	32.3
1986	23.6
1987	27.8
1988	55.8
1989	51.2

MANAGEMENT AREA 5-4

Table 115. Lake whitefish harvest and quota in kilograms for management area 5-4 (GB05), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	2781		
1980	2305		
1981	2718		
1982	4090		
1983	1293		
1984	291	5733	5.1
1985	587	5733	10.2
1986	714	5958	12.0
1987	3415	7225	47.3
1988	1303	7273	17.9
1989	2997	7220	41.5

Table 116. Annual gill net effort (km) for lake whitefish in management area 5-4 (GB05), 1979 - 1989.

YEAR	EFFORT
1979	48.2
1980	92.7
1981	75.7
1982	83.8
1983	58.6
1984	4.5
1985	3.8
1986	16.4
1987	50.3
1988	30.2
1989	36.5

Table 117. Lake whitefish gill net CUEs (kgs/1000 m) for management area 5-4 (GB05), 1979 - 1989.

YEAR	CUE
1979	57.4
1980	23.3
1981	33.9
1982	45.1
1983	20.6
1984	59.3
1985	155.3
1986	43.7
1987	67.9
1988	42.0
1989	82.1

Table 118. Chub harvest and quota in kilograms for management area 5-4 (GB05), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	25615		
1980	16301		
1981	0		
1982	444		
1983	900		
1984	4746	13518	35.1
1985	5835	15546	37.5
1986	2901	13518	21.5
1987	5252	17884	29.4
1988	9368	18000	52.0
1989	779	18000	4.3

Table 119. Annual gill net effort (km) for chub in management area 5-4 (GB05), 1979 - 1989.

YEAR	EFFORT
1979	621.5
1980	405.6
1981	0.0
1982	9.3
1983	71.7
1984	24.0
1985	47.6
1986	47.7
1987	68.3
1988	169.2
1989	5.6

Table 120. Chub gill net CUEs (kgs/1000 m) for management area 5-4 (GB05), 1979 - 1989.

YEAR	CUE
1979	41.5
1980	40.2
1981	0.0
1982	41.3
1983	12.6
1984	199.0
1985	85.6
1986	61.2
1987	76.9
1988	55.4
1989	139.1

Table 121. Chub yield (kgs/ha) for management area 5-4 (GB05), 1979 - 1989.

YEAR	YIELD
1979	0.63
1980	0.40
1981	0.00
1982	0.01
1983	0.02
1984	0.12
1985	0.14
1986	0.07
1987	0.13
1988	0.23
1989	0.02

Table 122. Yellow perch harvest and quota in kilograms for management area 5-4 (GB05), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	6186		
1980	6126		
1981	8522		
1982	8528		
1983	4979		
1984	4883	4767	102.4
1985	504	4767	10.6
1986	1476	4790	30.8
1987	2317	5230	44.3
1988	2268	5706	39.7
1989	682	5706	12.0

Table 123. Annual gill net effort (km) for yellow perch in management area 5-4 (GB05), 1979 - 1989.

YEAR	EFFORT
1979	122.2
1980	102.2
1981	140.6
1982	256.3
1983	188.5
1984	66.1
1985	11.9
1986	35.0
1987	46.9
1988	35.5
1989	15.0

Table 124. Yellow perch gill net CUEs (kgs/1000 m) for management area 5-4 (GB05), 1979 - 1989.

YEAR	CUE
1979	49.7
1980	58.7
1981	60.6
1982	33.1
1983	26.0
1984	73.9
1985	42.4
1986	42.2
1987	49.4
1988	63.9
1989	45.5

MANAGEMENT AREA 5-5

Table 125. Lake whitefish harvest and quota in kilograms for management area 5-5 (GB07), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	2590		
1980	1123		
1981	1283		
1982	3225		
1983	5490		
1984	4323	6759	64.0
1985	6162	6759	91.2
1986	9613	8111	118.5
1987	7595	10731	70.8
1988	3961	12620	31.4
1989	3900	11766	33.1

Table 126. Annual gill net effort (km) for lake whitefish in management area 5-5 (GB07), 1979 - 1989.

YEAR	EFFORT
1979	54.4
1980	36.6
1981	23.8
1982	75.7
1983	94.9
1984	39.3
1985	60.3
1986	95.6
1987	106.4
1988	55.7
1989	51.2

Table 127. Lake whitefish gill net CUEs (kgs/1000 m) for management area 5-5 (GB07), 1979 - 1989.

YEAR	CUE
1979	45.3
1980	28.5
1981	53.7
1982	41.6
1983	53.8
1984	109.4
1985	98.2
1986	101.0
1987	71.1
1988	70.5
1989	36.7

Table 128. Chub harvest and quota in kilograms for management area 5-5 (GB07), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	8867		
1980	4560		
1981	1087		
1982	2087		
1983	14942		
1984	13504	11265	119.9
1985	15063	12955	116.3
1986	10787	18925	57.0
1987	18396	31280	58.8
1988	25945	31488	82.4
1989	23767	31488	75.5

Table 129. Annual gill net effort (km) for chub in management area 5-5 (GB07), 1979 - 1989.

YEAR	EFFORT
1979	161.2
1980	106.9
1981	16.3
1982	26.7
1983	141.5
1984	134.2
1985	171.6
1986	152.2
1987	394.5
1988	399.7
1989	251.7

Table 130. Chub gill net CUEs (kgs/1000 m) for management area 5-5 (GB07), 1979 - 1989.

YEAR	CUE
1979	55.0
1980	41.8
1981	62.4
1982	78.7
1983	91.7
1984	101.4
1985	88.4
1986	66.5
1987	46.6
1988	64.9
1989	94.4

Table 131. Chub yield (kgs/ha) for management area 5-5 (GB07), 1979 - 1989.

YEAR	YIELD
1979	0.09
1980	0.05
1981	0.01
1982	0.02
1983	0.14
1984	0.14
1985	0.16
1986	0.11
1987	0.19
1988	0.27
1989	0.25

Table 132. Yellow perch harvest and quota in kilograms for management area 5-5 (GB07), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	11938		
1980	9741		
1981	8117		
1982	4957		
1983	8108		
1984	8263	6804	121.4
1985	3991	6804	58.7
1986	4868	11794	41.3
1987	7332	12500	58.7
1988	12035	13182	91.3
1989	4840	13182	36.7

Table 133. Annual gill net effort (km) for yellow perch in management area 5-5 (GB07), 1979 - 1989.

YEAR	EFFORT
1979	116.7
1980	122.0
1981	110.7
1982	111.9
1983	297.6
1984	127.5
1985	94.7
1986	94.0
1987	141.1
1988	180.0
1989	89.8

Table 134. Yellow perch gill net CUEs (kgs/1000 m) for management area 5-5 (GB07), 1979 - 1989.

YEAR	CUE
1979	102.3
1980	77.7
1981	73.1
1982	43.2
1983	27.2
1984	64.8
1985	42.1
1986	51.8
1987	52.0
1988	66.9
1989	53.9

MANAGEMENT AREA 5-6

Table 135. Lake whitefish harvest and quota in kilograms for management area 5-6 (GB08), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	0		
1980	205		
1981	415		
1982	5836		
1983	8450		
1984	73	7480	1.0
1985	4283	7480	57.3
1986	8137	12211	66.6
1987	9060	16246	55.8
1988	3691	16354	22.6
1989	6572	16354	40.2

Table 136. Chub harvest and quota in kilograms for management area 5-6 (GB08), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	4708		
1980	3554		
1981	3662		
1982	10591		
1983	13582		
1984	27978	28748	97.3
1985	34135	42077	81.1
1986	29373	49822	59.0
1987	27263	54941	49.6
1988	40844	55307	73.8
1989	41194	55307	74.5

Table 137. Annual gill net effort (km) for chub in management area 5-6 (GB08), 1979 - 1989.

YEAR	EFFORT
1979	155.2
1980	101.5
1981	69.0
1982	211.5
1983	159.4
1984	303.7
1985	325.5
1986	342.5
1987	344.8
1988	477.3
1989	376.2

Table 138. Chub gill net CUEs (kgs/1000 m) for management area 5-6 (GB08), 1979 - 1989.

YEAR	CUE
1979	28.1
1980	28.2
1981	44.3
1982	44.5
1983	54.6
1984	91.2
1985	103.4
1986	84.0
1987	79.1
1988	85.6
1989	109.5

Table 139. Chub yield (kgs/ha) for management area 5-6 (GB08), 1979 - 1989.

YEAR	YIELD
1979	0.03
1980	0.02
1981	0.02
1982	0.07
1983	0.08
1984	0.19
1985	0.24
1986	0.20
1987	0.19
1988	0.28
1989	0.28

Table 140. Lake trout/backcross harvest and quota in kilograms for management area 5-6 (GB08), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	0		
1980	0		
1981	0		
1982	0		
1983	0		
1984	0	2268	0.0
1985	7270	2268	320.5
1986	1717	2279	75.3
1987	3508	4558	77.0
1988	11923	4558	261.6
1989	4820	4558	105.7

MANAGEMENT AREA 5-7

Table 141. Lake whitefish harvest and quota in kilograms for management area 5-7 (GB09), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	17043		
1980	20873		
1981	9490		
1982	12241		
1983	3039		
1984	5649	13878	40.7
1985	8337	13878	60.1
1986	16783	20998	79.9
1987	9275	21021	44.1
1988	4431	24248	18.3
1989	6572	24338	27.0

Table 142. Annual gill net effort (km) for lake whitefish in management area 5-7 (GB09), 1979 - 1989.

YEAR	EFFORT
1979	99.4
1980	370.5
1981	125.8
1982	433.8
1983	130.4
1984	115.8
1985	181.3
1986	182.6
1987	142.8
1988	102.2
1989	100.7

Table 143. Lake whitefish gill net CUEs (kgs/1000 m) for management area 5-7 (GB09), 1979 - 1989.

YEAR	CUE
1979	169.6
1980	54.4
1981	75.2
1982	25.5
1983	22.0
1984	48.9
1985	46.3
1986	92.5
1987	64.9
1988	42.9
1989	65.2

Table 144. Chub harvest and quota in kilograms for management area 5-7 (GB09), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	7452		
1980	2742		
1981	0		
1982	0		
1983	5204		
1984	6668	8111	82.2
1985	9072	11918	76.1
1986	4411	10364	42.6
1987	8253	10471	78.8
1988	10492	11441	91.7
1989	9870	10538	93.7

Table 145. Annual gill net effort (km) for chub in management area 5-7 (GB09), 1979 - 1989.

YEAR	EFFORT
1979	194.2
1980	55.5
1981	0.0
1982	0.0
1983	44.5
1984	78.2
1985	102.4
1986	60.5
1987	137.4
1988	108.6
1989	76.1

Table 146. Chub gill net CUEs (kgs/1000 m) for management area 5-7 (GB09), 1979 - 1989.

YEAR	CUE
1979	38.6
1980	39.5
1981	0.0
1982	0.0
1983	70.2
1984	85.8
1985	89.2
1986	68.5
1987	60.1
1988	96.6
1989	129.7

Table 147. Chub yield (kgs/ha) for management area 5-7 (GB09), 1979 - 1989.

YEAR	YIELD
1979	0.16
1980	0.06
1981	0.00
1982	0.00
1983	0.10
1984	0.15
1985	0.20
1986	0.10
1987	0.18
1988	0.23
1989	0.22

Table 148. Yellow perch harvest and quota in kilograms for management area 5-7 (GB09), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	4330		
1980	1857		
1981	371		
1982	3613		
1983	9454		
1984	597	4672	12.8
1985	2081	4672	44.5
1986	7258	7031	103.2
1987	5504	10542	52.2
1988	6147	11211	54.8
1989	1693	11226	15.1

Table 149. Annual gill net effort (km) for yellow perch in management area 5-7 (GB09), 1979 - 1989.

YEAR	EFFORT
1979	37.2
1980	6.4
1981	3.1
1982	5.2
1983	154.2
1984	5.6
1985	21.6
1986	97.4
1987	104.0
1988	97.1
1989	23.0

Table 150. Yellow perch gill net CUEs (kgs/1000 m) for management area 5-7 (GB09), 1979 - 1989.

YEAR	CUE
1979	115.3
1980	162.2
1981	119.0
1982	186.5
1983	61.0
1984	75.4
1985	81.2
1986	72.6
1987	51.7
1988	56.6
1989	44.0

MANAGEMENT AREA 5-8

Table 151. Lake whitefish harvest and quota in kilograms for management area 5-8 (GB10), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	1368		
1980	10539		
1981	7256		
1982	11726		
1983	12070		
1984	898	13518	6.6
1985	3926	3605	108.9
1986	4560	3605	126.5
1987	3344	9012	37.1
1988	3468	9072	38.2
1989	4114	9072	45.3

Table 152. Annual gill net effort (km) for lake whitefish in management area 5-8 (GB10), 1979 - 1989.

YEAR	EFFORT
1979	31.6
1980	553.9
1981	311.8
1982	310.6
1983	310.2
1984	20.6
1985	27.2
1986	20.9
1987	30.2
1988	37.7
1989	27.1

Table 153. Lake whitefish gill net CUEs (kgs/1000 m) for management area 5-8 (GB10), 1979 - 1989.

YEAR	CUE
1979	34.4
1980	18.4
1981	21.8
1982	36.9
1983	34.9
1984	37.1
1985	137.9
1986	210.0
1987	108.9
1988	91.2
1989	151.7

Table 154. Chub harvest and quota in kilograms for management area 5-8 (GB10), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	17230		
1980	4159		
1981	2371		
1982	7651		
1983	25413		
1984	22639	13518	167.5
1985	22546	25339	89.0
1986	16711	23071	72.4
1987	13786	16447	83.8
1988	16339	16533	98.8
1989	22366	16533	135.3

Table 155. Annual gill net effort (km) for chub in management area 5-8 (GB10), 1979 - 1989.

YEAR	EFFORT
1979	480.8
1980	102.5
1981	56.5
1982	67.4
1983	174.0
1984	289.4
1985	281.9
1986	246.9
1987	268.7
1988	172.8
1989	159.6

Table 156. Chub gill net CUEs (kgs/1000 m) for management area 5-8 (GB10), 1979 - 1989.

YEAR	CUE
1979	31.4
1980	29.8
1981	34.3
1982	51.7
1983	90.4
1984	74.0
1985	80.5
1986	68.1
1987	50.5
1988	94.5
1989	140.1

Table 157. Chub yield (kgs/ha) for management area 5-8 (GB10), 1979 - 1989.

YEAR	YIELD
1979	0.22
1980	0.05
1981	0.03
1982	0.10
1983	0.33
1984	0.32
1985	0.33
1986	0.25
1987	0.20
1988	0.24
1989	0.33

Table 158. Lake trout/backcross harvest and quota in kilograms for management area 5-8 (GB10), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	745		
1980	30074		
1981	23474		
1982	21238		
1983	17798		
1984	2225	2268	98.1
1985	4220	4536	93.0
1986	3945	4536	87.0
1987	4374	4536	96.4
1988	4032	4536	88.9
1989	4584	4536	101.1

Table 159. Annual gill net effort (km) for lake trout/backcross in management area 5-8 (GB10), 1979 - 1989.

YEAR	EFFORT
1979	26.6
1980	565.7
1981	343.5
1982	0.0
1983	1.1
1984	0.0
1985	30.3
1986	20.9
1987	30.2
1988	37.7
1989	27.1

Table 160. Lake trout/backcross gill net CUEs (kgs/1000 m) for management area 5-8 (GB10), 1979 - 1989.

YEAR	CUE
1979	11.7
1980	52.7
1981	68.1
1982	0.0
1983	108.2
1984	0.0
1985	130.9
1986	164.2
1987	143.8
1988	102.3
1989	169.1

MANAGEMENT AREA 5-9

Table 161. Lake whitefish harvest and quota in kilograms for management area 5-9 (GB11), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	10438		
1980	20318		
1981	46181		
1982	25554		
1983	28233		
1984	26863	26811	100.2
1985	33472	33565	99.7
1986	33112	40361	82.0
1987	19239	40441	47.6
1988	19457	40710	47.8
1989	18663	38460	48.5

Table 162. Annual gill net effort (km) for lake whitefish in management area 5-9 (GB11), 1979 - 1989.

YEAR	EFFORT
1979	245.7
1980	665.2
1981	585.8
1982	644.4
1983	634.4
1984	239.6
1985	128.8
1986	152.4
1987	151.4
1988	148.3
1989	136.6

Table 163. Lake whitefish gill net CUEs (kgs/1000 m) for management area 5-9 (GB11), 1979 - 1989.

YEAR	CUE
1979	42.7
1980	30.6
1981	79.1
1982	36.6
1983	38.9
1984	112.8
1985	261.5
1986	218.6
1987	127.1
1988	131.2
1989	136.6

Table 164. Chub harvest and quota in kilograms for management area 5-9 (GB11), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	666		
1980	115		
1981	23		
1982	0		
1983	7001		
1984	3135	3154	99.4
1985	2839	3627	78.3
1986	5596	6849	81.7
1987	2419	6736	35.9
1988	7058	6780	104.1
1989	11171	11303	98.8

Table 165. Annual gill net effort (km) for chub in management area 5-9 (GB11), 1979 - 1989.

YEAR	EFFORT
1979	36.6
1980	9.7
1981	1.8
1982	0.0
1983	82.5
1984	51.7
1985	38.4
1986	84.7
1987	58.4
1988	92.8
1989	85.1

Table 166. Chub gill net CUEs (kgs/1000 m) for management area 5-9 (GB11), 1979 - 1989.

YEAR	CUE
1979	18.0
1980	11.9
1981	12.2
1982	0.0
1983	29.1
1984	61.0
1985	74.4
1986	66.5
1987	41.2
1988	75.9
1989	131.2

Table 167. Chub yield (kgs/ha) for management area 5-9 (GB11), 1979 - 1989.

YEAR	YIELD
1979	0.02
1980	0.00
1981	0.00
1982	0.00
1983	0.16
1984	0.09
1985	0.08
1986	0.16
1987	0.07
1988	0.20
1989	0.31

Table 168. Lake trout/backcross harvest and quota in kilograms for management area 5-9 (GB11), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	0		
1980	175		
1981	0		
1982	19		
1983	0		
1984	4	4037	0.1
1985	4000	4037	99.1
1986	4627	4930	93.9
1987	3090	4937	62.6
1988	4909	4937	99.4
1989	4574	4937	92.6

Table 169. Annual gill net effort (km) for lake trout/backcross in management area 5-9 (GB11), 1979 - 1989.

YEAR	EFFORT
1979	70.0
1980	422.4
1981	331.2
1982	0.7
1983	0.0
1984	3.2
1985	117.8
1986	130.2
1987	128.5
1988	124.1
1989	105.4

Table 170. Lake trout/backcross gill net CUEs (kgs/1000 m) for management area 5-9 (GB11), 1979 - 1989.

YEAR	CUE
1979	1.7
1980	11.9
1981	39.2
1982	27.1
1983	0.0
1984	1.3
1985	33.6
1986	35.5
1987	23.9
1988	39.5
1989	43.4

NORTH CHANNEL

MANAGEMENT AREA 6-1

Table 171. Lake whitefish harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	65200		
1980	74929		
1981	106697		
1982	191314		
1983	227163		
1984	183999	223478	82.3
1985	171208	223478	76.6
1986	173202	225225	76.9
1987	203063	226418	89.7
1988	178310	241643	73.8
1989	138358	243007	56.9

Table 172. Lake whitefish harvest in kilograms for assessment areas NC01, NC02 and NC03 (subareas of management area 6-1), 1979 - 1989.

NC01

YEAR	HARVEST
1979	7606
1980	2735
1981	7613
1982	14988
1983	26070
1984	35782
1985	22957
1986	26538
1987	17037
1988	22299
1989	54068

NC02

YEAR	HARVEST
1979	55051
1980	70977
1981	85469
1982	152847
1983	175116
1984	123398
1985	131636
1986	138454
1987	167799
1988	147859
1989	78186

NC03

YEAR	HARVEST
1979	3012
1980	2268
1981	8137
1982	7914
1983	11317
1984	20585
1985	19020
1986	10634
1987	18104
1988	9414
1989	6096

Table 173. Annual gill net effort (km) for lake whitefish in assessment areas NC01, NC02 and NC03 (subareas of management area 6-1), 1979 - 1989.

NC01		NC02		NC03	
YEAR	EFFORT	YEAR	EFFORT	YEAR	EFFORT
1979	318.6	1979	1764.7	1979	146.9
1980	105.5	1980	1801.5	1980	121.6
1981	178.5	1981	1610.5	1981	343.1
1982	302.4	1982	2199.5	1982	215.0
1983	344.6	1983	2544.6	1983	284.5
1984	347.7	1984	2173.7	1984	413.3
1985	336.0	1985	2522.9	1985	367.7
1986	463.3	1986	2699.0	1986	291.5
1987	230.8	1987	2328.3	1987	338.7
1988	414.9	1988	2218.7	1988	213.2
1989	1139.1	1989	1691.4	1989	217.7

Table 174. Annual trap net effort (# of nets) for lake whitefish in assessment areas NC01 and NC02 (subareas of management area 6-1), 1979 - 1989.

NC01		NC02	
YEAR	EFFORT	YEAR	EFFORT
1979	0	1979	0
1980	0	1980	0
1981	0	1981	0
1982	0	1982	9
1983	0	1983	0
1984	0	1984	2
1985	0	1985	24
1986	17	1986	4
1987	58	1987	33
1988	61	1988	198
1989	23	1989	103

Table 175. Lake whitefish gill net CUEs (kgs/1000 m) for assessment areas NC01, NC02 and NC03 (subareas of management area 6-1), 1979 - 1989.

NC01		NC02		NC03	
YEAR	CUE	YEAR	CUE	YEAR	CUE
1979	23.9	1979	31.2	1979	20.4
1980	25.9	1980	39.2	1980	18.7
1981	42.6	1981	52.8	1981	23.4
1982	49.6	1982	69.3	1982	29.2
1983	75.7	1983	67.8	1983	38.5
1984	102.3	1984	56.7	1984	49.7
1985	68.3	1985	51.4	1985	51.4
1986	52.4	1986	50.9	1986	35.3
1987	38.7	1987	60.7	1987	53.4
1988	41.7	1988	56.0	1988	44.1
1989	45.8	1989	41.0	1989	28.0

Table 176. Lake whitefish trap net CUEs (kgs/net) for assessment areas NC01 and NC02 (subareas of management area 6-1), 1979 - 1989.

NC01		NC02	
YEAR	CUE	YEAR	CUE
1979	0.0	1979	0.0
1980	0.0	1980	0.0
1981	0.0	1981	0.0
1982	0.0	1982	30.9
1983	0.0	1983	0.0
1984	0.0	1984	32.0
1985	0.0	1985	74.9
1986	128.3	1986	125.2
1987	138.4	1987	155.7
1988	80.9	1988	118.3
1989	85.2	1989	81.4

Table 177. Yellow perch harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	17228		
1980	3671		
1981	40415		
1982	23701		
1983	20780		
1984	34828	67474	51.6
1985	29577	67474	43.8
1986	16019	68425	23.4
1987	22216	75073	29.6
1988	38917	75073	51.8
1989	30029	78779	38.1

Table 178. Yellow perch harvest in kilograms for assessment areas NC01, NC02 and NC03 (subareas of management area 6-1), 1979 - 1989.

NC01		NC02		NC03	
YEAR	HARVEST	YEAR	HARVEST	YEAR	HARVEST
1979	617	1979	4858	1979	11890
1980	29	1980	842	1980	2818
1981	77	1981	7396	1981	33224
1982	3	1982	5223	1982	18638
1983	0	1983	11003	1983	9911
1984	67	1984	9221	1984	25843
1985	0	1985	6993	1985	22791
1986	118	1986	3532	1986	12490
1987	0	1987	4292	1987	18656
1988	417	1988	8247	1988	31942
1989	1195	1989	4944	1989	23884

Table 179. Annual gill net effort (km) for yellow perch in assessment areas NC02 and NC03 (subareas of management area 6-1), 1979 - 1989.

NC02		NC03	
YEAR	EFFORT	YEAR	EFFORT
1979	97.3	1979	187.9
1980	8.6	1980	32.0
1981	135.9	1981	458.8
1982	66.9	1982	486.1
1983	215.3	1983	272.9
1984	179.8	1984	538.8
1985	150.5	1985	492.9
1986	142.5	1986	521.3
1987	100.2	1987	487.9
1988	187.0	1988	594.0
1989	187.8	1989	535.0

Table 180. Yellow perch gill net CUEs (kgs/1000 m) for assessment areas NC02 and NC03 (subareas of management area 6-1), 1979 - 1989.

NC02		NC03	
YEAR	CUE	YEAR	CUE
1979	47.1	1979	60.9
1980	84.3	1980	81.0
1981	51.4	1981	71.8
1982	37.5	1982	37.6
1983	43.3	1983	33.1
1984	42.8	1984	47.1
1985	42.9	1985	45.8
1986	23.5	1986	22.6
1987	35.2	1987	38.2
1988	44.1	1988	53.3
1989	25.8	1989	44.2

Table 181. Walleye harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	19529		
1980	11291		
1981	17142		
1982	19648		
1983	9168		
1984	10502	21866	48.0
1985	16808	21866	76.9
1986	13674	21867	62.5
1987	11175	21728	51.4
1988	11490	21728	52.9
1989	16416	22383	73.3

Table 182. Walleye harvest in kilograms for assessment areas NC01, NC02 and NC03 (subareas of management area 6-1), 1979 - 1989.

NC01		NC02		NC03	
YEAR	HARVEST	YEAR	HARVEST	YEAR	HARVEST
1979	8320	1979	3228	1979	8152
1980	4464	1980	2023	1980	6744
1981	14985	1981	1124	1981	3988
1982	17014	1982	1694	1982	1950
1983	5106	1983	2776	1983	2295
1984	4659	1984	2340	1984	3636
1985	12284	1985	2219	1985	2541
1986	8135	1986	3649	1986	2569
1987	7143	1987	2335	1987	2482
1988	5910	1988	1737	1988	4166
1989	10474	1989	3238	1989	2696

Table 183. Annual gill net effort (km) for walleye in assessment areas NC01, NC02 and NC03 (subareas of management area 6-1), 1979 - 1989.

NC01	
YEAR	EFFORT
1979	375.2
1980	88.3
1981	329.3
1982	452.4
1983	172.6
1984	153.1
1985	367.8
1986	334.4
1987	268.2
1988	262.5
1989	502.7

NC02	
YEAR	EFFORT
1979	242.7
1980	303.8
1981	219.3
1982	185.7
1983	288.3
1984	312.4
1985	241.8
1986	283.6
1987	245.6
1988	140.7
1989	387.7

NC03	
YEAR	EFFORT
1979	101.2
1980	73.3
1981	25.9
1982	22.7
1983	42.3
1984	97.4
1985	43.4
1986	38.7
1987	91.2
1988	47.1
1989	31.2

Table 184. Walleye gill net CUEs (kgs/1000 m) for assessment areas NC01, NC02 and NC03 (subareas of management area 6-1), 1979 - 1989.

NC01	
YEAR	CUE
1979	22.2
1980	50.6
1981	44.3
1982	37.6
1983	29.6
1984	30.4
1985	33.4
1986	24.3
1987	26.6
1988	22.5
1989	20.8

NC02	
YEAR	CUE
1979	12.9
1980	6.4
1981	4.7
1982	9.1
1983	8.5A
1984	7.0
1985	8.7
1986	12.2
1987	7.0
1988	10.6
1989	7.3

NC03	
YEAR	CUE
1979	79.7
1980	66.6
1981	42.3
1982	41.0
1983	33.0
1984	33.2
1985	48.6
1986	35.0
1987	20.1
1988	62.5
1989	78.7

Table 185. Lake trout/backcross harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	3096		
1980	2450		
1981	1638		
1982	2464		
1983	3309		
1984	949	2403	39.5
1985	1040	2403	43.3
1986	4100	5045	81.3
1987	3974	5055	78.6
1988	3336	5055	66.0
1989	4625	5281	87.6

Table 186. Lake trout/backcross harvest in kilograms for assessment areas NC01, NC02 and NC03 (subareas of management area 6-1), 1979 - 1989.

NC01		NC02		NC03	
YEAR	HARVEST	YEAR	HARVEST	YEAR	HARVEST
1979	922	1979	2165	1979	9
1980	166	1980	2228	1980	53
1981	311	1981	1315	1981	8
1982	119	1982	36	1982	0
1983	10	1983	139	1983	0
1984	38	1984	98	1984	0
1985	41	1985	504	1985	489
1986	54	1986	1939	1986	2102
1987	6	1987	2880	1987	1087
1988	39	1988	2436	1988	892
1989	450	1989	2548	1989	1618

Table 187. Lake trout/backcross gill net CUEs (kgs/1000 m) for assessment areas NC01, NC02 and NC03 (subareas of management area 6-1), 1979 - 1989.

NC01 YEAR	NC01 CUE	NC02 YEAR	NC02 CUE	NC03 YEAR	NC03 CUE
1979	4.7	1979	3.8	1979	0.0
1980	12.3	1980	2.9	1980	5.5
1981	2.7	1981	2.6	1981	0.5
1982	24.3	1982	2.5	1982	0.0
1983	0.6	1983	2.0	1983	0.0
1984	2.0	1984	1.2	1984	0.0
1985	1.6	1985	1.2	1985	3.2
1986	1.4	1986	2.1	1986	5.8
1987	0.8	1987	3.8	1987	2.3
1988	0.9	1988	3.1	1988	5.4
1989	1.9	1989	3.3	1989	6.8

Table 188. Northern pike harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	6777		
1980	5308		
1981	11479		
1982	7702		
1983	6395		
1984	7441	16390	45.4
1985	8612	16390	52.5
1986	8133	16389	49.6
1987	5638	16422	34.3
1988	4452	16422	27.1
1989	6422	18888	34.0

Table 189. Pink salmon harvest and quota in kilograms for management area 6-1 (NC01, NC02, NC03), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	1113		
1980	0		
1981	7759		
1982	0		
1983	31618		
1984	293		
1985	13138	129412	10.2
1986	2428	67077	3.6
1987	1296	132568	1.0
1988	647	44597	1.5
1989	5524	71871	7.7

MANAGEMENT AREA 6-2

Table 190. Lake whitefish harvest and quota in kilograms for management area 6-2 (NC04), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	269		
1980	1444		
1981	95		
1982	3639		
1983	2769		
1984	4188	4796	87.3
1985	8689	4796	181.2
1986	3396	2365	143.6
1987	2265	2371	95.5
1988	4676	2388	195.8
1989	2591	114	2272.8

Table 191. Annual gill net effort (km) for lake whitefish in management area 6-2 (NC04), 1979 - 1989.

YEAR	EFFORT
1979	9.9
1980	74.3
1981	10.5
1982	83.2
1983	36.2
1984	45.7
1985	132.3
1986	39.5
1987	47.7
1988	59.4
1989	58.3

Table 192. Lake whitefish gill net CUEs (kgs/1000 m) for management area 6-2 (NC04), 1979 - 1989.

YEAR	CUE
1979	26.8
1980	19.2
1981	8.9
1982	37.0
1983	71.7
1984	82.0
1985	64.7
1986	82.3
1987	44.5
1988	56.8
1989	43.9

Table 193. Yellow perch harvest and quota in kilograms for management area 6-2 (NC04), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	7653		
1980	1170		
1981	4492		
198B	8582		
1983	9406		
1984	12988	4324	300.4
1985	10043	12825	78.3
1986	7659	6745	113.6
1987	10547	6826	154.5
1988	11737	6996	167.8
1989	8889	2602	341.6

Table 194. Annual gill net effort (km) for yellow perch in management area 6-2 (NC04), 1979 - 1989.

YEAR	EFFORT
1979	91.3
1980	14.1
1981	58.7
1982	58.2
1983	113.4
1984	195.9
1985	98.2
1986	82.5
1987	124.1
1988	76.4
1989	75.6

Table 195. Yellow perch gill net CUEs (kgs/1000 m) for management area 6-2 (NC04), 1979 - 1989.

YEAR	CUE
1979	83.8
1980	80.6
1981	76.8
1982	123.0
1983	74.2
1984	66.8
1985	103.0
1986	92.9
1987	85.7
1988	131.3
1989	106.4

Table 196. Lake trout/backcross harvest and quota in kilograms for management area 6-2 (NC04), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	26		
1980	20		
1981	7		
1982	8		
1983	14		
1984	70	340	20.6
1985	772	340	227.1
1986	549	567	96.8
1987	332	342	97.1
1988	673	342	196.8
1989	1219	114	1069.3

Table 197. Lake trout/backcross gill net CUEs (kgs/1000 m) for management area 6-2 (NC04), 1979 - 1989.

YEAR	CUE
1979	10.0
1980	1.0
1981	0.0
1982	0.0
1983	0.0
1984	0.0
1985	6.6
1986	6.9
1987	3.1
1988	14.0
1989	18.7

MANAGEMENT AREA 6-3

Table 198. Lake whitefish harvest and quota in kilograms for management area 6-3 (NC05), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	992		
1980	231		
1981	83		
1982	852		
1983	592		
1984	559	6759	8.3
1985	128	6759	1.9
1986	274	5910	4.6
1987	82	4338	1.9
1988	198	4336	4.6
1989	849	4855	17.5

Table 199. Annual gill net effort (km) for lake whitefish in management area 6-3 (NC05), 1979 - 1989.

YEAR	EFFORT
1979	36.3
1980	32.1
1981	15.4
1982	82.0
1983	54.2
1984	13.2
1985	2.8
1986	6.4
1987	11.9
1988	3.2
1989	1.1

Table 200. Lake whitefish gill net CUEs (kgs/1000 m) for management area 6-3 (NC05), 1979 - 1989.

YEAR	CUE
1979	25.8
1980	7.1
1981	5.4
1982	10.4
1983	10.6
1984	39.2
1985	46.1
1986	37.5
1987	6.8
1988	61.9
1989	770.9

Table 201. Yellow perch harvest and quota in kilograms for management area 6-3 (NC05), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	6668		
1980	2826		
1981	5611		
1982	2578		
1983	7758		
1984	6153	12825	48.0
1985	113	4324	2.6
1986	1376	5450	25.2
1987	836	5347	15.6
1988	4029	5347	75.4
1989	5	1245	0.4

Table 202. Annual gill net effort (km) for yellow perch in management area 6-3 (NC05), 1979 - 1989.

YEAR	EFFORT
1979	55.3
1980	51.2
1981	46.8
1982	47.6
1983	146.0
1984	113.9
1985	36.7
1986	44.6
1987	19.0
1988	123.1
1989	5.5

Table 203. Yellow perch gill net CUEs (kgs/1000 m) for management area 6-3 (NC05), 1979 - 1989.

YEAR	CUE
1979	120.9
1980	47.4
1981	81.3
1982	50.7
1983	50.6
1984	54.4
1985	58.7
1986	31.1
1987	44.3
1988	32.7
1989	0.9

Table 204. Lake trout/backcross harvest and quota in kilograms for management area 6-3 (NC05), 1979 - 1989.

YEAR	HARVEST	QUOTA	PERCENT TAKEN
1979	1529		
1980	6066		
1981	2055		
1982	1073		
1983	2041		
1984	717	1134	63.2
1985	487	1134	42.9
1986	563	1134	49.6
1987	430	1023	42.0
1988	2135	1023	208.7
1989	941	877	107.3

Table 205. Lake trout/backcross gill net CUEs (kgs/1000 m) for management area 6-3 (NC05), 1979 - 1989.

YEAR	CUE
1979	29.8
1980	44.1
1981	65.2
1982	1.0
1983	25.7
1984	1.0
1985	150.0
1986	57.1
1987	61.6
1988	523.0
1989	4705.0